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"Telephony's" Review of the Year

Annual Survey of Conditions and Events of Past Year in Telephone Field—Highlights of Progress and Development—Sales of Properties and Greater Realization of Their Values Strengthen Morale of Industry—World Progress

By Stanley R. Edwards

To the telephone owner and manager probably the outstanding feature of the year 1926 was the great market for telephone properties. Apparently there was an unusual rush to invest in telephone securities with few to be had. Hence investment houses sought to purchase properties, reorganize the companies and issue securities.

During the early and middle part of the year the owner of an Independent telephone plant could obtain almost any price he asked for his property. It was a "Seller's" market and a number of plants, particularly of the smaller sizes, changed ownership. Toward the latter part of the year, however, analysis of the situation brought out the dangers of some of these sales and the real telephone man would have nothing to do with the so-called "speculators" in telephone properties.

Resulting from this great desire of outsiders, in many cases, purchasing or attempting to purchase telephone properties, has come a real appreciation of the telephone business. Those who have interests in properties realize that their value is much greater than they had thought it, and they feel that if others believe they can make them a paying proposition, the telephone men certainly should be able to. Hence there is a settlement of the feeling of unrest, and a firm conviction that the telephone business is "the best business on earth."

During the year there have been a great many changes in the ownerships of Independent properties and a number of new interests have come into the field. To be successful these new interests must acquire the telephone background. They must study the history of the telephone industry, particularly that of the Independent field.

To understand the alignments, they must know the histories not only of the companies but of the men who have founded and managed the various plants. To be successful they must know all of the historical associations and give them due weight when formulating their plans and policies for the operation of the plants.

Many of the properties that have been purchased will continue under the same management and with but little change in policies. Others are being grouped into systems and operated from general headquarters. Control of some companies lies in holding companies, of which a number have been organized during the year.

Just what will be the outcome of the many consolidations and purchases cannot be foretold. It will take several years to ascertain whether the operating results will be sufficient to meet the financial obligations that have been incurred. Where properties have been purchased by experienced telephone men, there is no question regarding their successful and continued operation.

Number of Telephones.

The demand for new telephones during 1926 was steady. As the year closed, there is probably a total of close to 17,800,000 telephones in service, of which 17,600,000 are Bell-owned or have connections with the Bell system. The rate of increase in number of telephones among the larger companies was slightly over 6 per cent.

The operating results were in the main, satisfactory, revenues showing a considerable increase over the preceding year.

Service Improvements.

Telephone service generally throughout the country showed great improvement during the year. This was especially true of long distance service, connections now being made in much faster time through the extension of the C. L. R. method of operating.

An innovation in local operation, which was commenced about the middle of the year, was the elimination of the repetition

of the number by the operator and the substitution of the words, "Thank You." The institution of this courtesy phrase was generally well received by the public and has tended to create greater courtesy upon the part of the telephone-using public, to say nothing of the advantages in an operating way.

The latter part of the year the Bell system introduced changes in its schedules of intrastate toll rates so as to bring them more in line with the long distance rates, which were radically reduced. Practically all the state commissions have approved the revised toll rate schedules.

The Telephone's 50th Anniversary.

The celebration of the 50th anniversary of the telephone's invention was observed during the year commencing on March 10, for it was on March 10, 1876 that the first intelligible sentence, "Mr. Watson, come here; I want you," was transmitted over the electric telephone. Many telephone exchanges all over the country held open house on that day and entertained the public.

From time to time since various exchanges have held anniversary celebrations, in some cases coinciding with the date on which the first exchange in that particular place was opened for operation. As a result of these celebrations and the newspaper and other publicity following them, the story of the telephone and its development is much more generally known to the public than ever before.

Personnel of Industry.

To the matter of public relations increasing attention was paid, particularly by the rank and file of employes. This, of course, is an indication of the good morale of the industry or the good employe relations that are now prevailing generally.

Much has been written and said about the problem of "money and men" in the past few years. The year 1926 bore evidence that the money problem was well on its way to solution. There were also definite indications that the problem of personnel is being worked out.

Young men of promise are being developed, particularly in the organizations of the larger companies and in the smaller plants a new personnel is gradually replacing inefficient or indifferent staff members. The opportunities are opening up to those persons who have been preparing for advanced positions.

The coming years will see more of this advancement, for there are only about 40 per cent of the homes in the United States supplied with telephone service. Surely there is great opportunity for expansion of the business.

COMING CONVENTIONS.

South Dakota, Sioux Falls, Cataract Hotel, January 11, 12 and 13.

Minnesota, St. Paul, St. Francis Hotel, January 25, 26 and 27.

Nebraska, Lincoln, Lincoln Hotel, February 15, 16 and 17.

North Dakota, March 8, 9 and 10.

Oklahoma, Oklahoma City, Huckins Hotel, March 8, 9 and 10.

Texas, Fort Worth, Texas Hotel, March 15, 16, 17 and 18.

Kansas, Manhattan, April 5, 6 and 7.

New York, Rochester, Powers Hotel, May 25, 26 and 27.

Association Work.

The annual conventions of the various state associations were, as a whole, more largely attended than in previous years and greater interest was taken in the convention proceedings. The reports presented at these meetings indicated that the associations are doing excellent work in increasing their scope of service to member companies. Incidentally, practically every association reported a larger membership in good standing than in any previous year.

The correspondence course in toll operating offered by the United States Independent Telephone Association to member companies was exceptionally well received, more than 1,200 operators having been enrolled in the six months of its operation. Managers of exchanges where operators have taken the course are loud in their praises of the good results to the operators and the companies.

Another activity of the national organization was the publication of the "Code Handbook" and "Interpretations of Plant Accounting." These were the results of much hard work during the year on the part of the national association's accounting division.

Independent and Bell Groups.

The relations between the Independent and the Bell groups, it may be noted, are showing improvement each year. During 1926 a number of conferences were participated in by the executive committee of the United States Independent Telephone Association and representatives of the Bell group.

While no announcement has been made of definite agreement of a procedure in the matter of purchases of Independent companies by Bell companies, satisfactory progress is believed to have been made.

It is evident that a real spirit of cooperation prevails between the groups having in mind the best interests of the industry as a whole. Illustrative of this is the resolution regarding the sale of telephone companies to speculators or promoters, solely or primarily interested in the sale or exploitation of securities, which was adopted at a conference in July.

Rates and Commissions.

Apparently there is a decrease in the number of applications being made to the state commission for rate increases. With the exception of a limited few states, in which the commissions have been dilatory in allowing increases, commission activities are relating more and more to matters other than rates.

In New York and in Illinois the matter of rates of the Bell companies are before the federal courts. In Ohio the statewide investigation of the Bell rates which was commenced late in December, 1925, is still in progress.

One of the events of the year was the announcement by the American Telephone & Telegraph Co. in April that the percentage of gross revenues which license companies pay for various services that the American Telephone & Telegraph Co. renders had been reduced from 4½ per cent to 4 per cent.

Depreciation Order.

In November the Interstate Commerce Commission issued its long-delayed order relative to depreciation, laying down general rules for telephone companies and other public carriers to follow after September 1, 1927. This order informs service companies how to proceed in setting up adequate reserves, and will be of increasing importance as the system is established and amplified.

For four years the commission and its accounting staff had been studying depreciation in all its phases, and as affecting the various utilities. In its final analysis, the commission accepted the theory laid down by the telephone companies, that depreciation should be charged to operating expense in regular periodical

installments during the service life of the equipment involved.

This was contrary to the theory advanced by the railroads and the electric power companies that favored a "retirement" reserve to be created as needed when the property is retired. The year 1927 will see additional orders on this important operation.

Exchange Buildings and Equipment.

The move towards better exchange buildings, company-owned, continued during the year. The idea that the telephone company should be housed in its own building and not in rented rooms on the second floor rear of some disreputable looking building is becoming firmly established. Many companies of the smaller size are now looking forward to owning modern buildings in keeping with the investment of their business as compared with other local businesses.

While it is true that in some cases needed construction work was held up, because of negotiations for sales of properties, on the whole there was a considerable amount of rebuilding of plant and rehabilitation of exchange equipment during the year.

In construction work the developments were along the lines of greater efficiency, enabling man-power to accomplish more through the use of labor-saving equipment.

In the line of telephone equipment for manual exchanges there were no radical developments. The changes made were mainly refinements of existing apparatus.

Extension of Automatic Installations.

There was a continuance of the extensive program of the conversion of exchanges to semi-mechanical and automatic operation that was begun on a really large scale some seven years ago.

During 1926 several Strowger automatic switchboard equipment were brought out in this country which it is claimed will serve as a basis for the standardization of automatic operation for small exchanges, either operating singly or in groups with one or more toll operating centers.

One important development of this kind has been the design of automatic central office equipment that will permit the use of the existing magneto telephones. One of these switchboards is a very simple arrangement, making use of one standard connector switch per line and a dial on each telephone. This is said to afford an economic arrangement for exchanges operating up to 15 or 20 lines, which may be loaded with as many telephones per line as needed. A similar switchboard has been designed with a larger capacity making use of line switches and connectors.

A still newer development of the Strowger engineers is known as the semi-automatic magneto exchange. This development promises to be of great value to companies operating groups of small exchanges in that it requires no change at all in the subscribers' equipment. The S-A-M-X, as it is known to the trade, consists of an automatic switchboard which, under the control of the operator at the toll center, makes connections between subscribers connected to the local exchange.

Radio Programs Over Telephone Wires.

The use of telephone facilities for providing radio program service increased to such an extent during the year that October saw the organization of the National Radio Program Service Association. The first convention of this new association will be held early in the new year.

While the furnishing of such programs is being done ordinarily by an organization separate from the telephone company, telephone men are greatly interested in this new by-product and are active in furnishing a radio program service.

There are probably about 25 companies furnishing this service in various communities, principally in the Middle West. St. Paul, Minn., is the largest city in which it is found. The number of subscribers to this new service varies from about 25 in smaller towns to more than 500, with new ones being added as fast as equipment can be secured.

Bell System Progress During 1926.

It is estimated that the net increase in the number of Bell-owned stations will be over three-quarters of a million. This growth, together with the growth in connecting company stations, amounting to about 115,000, will bring up the total of interconnecting stations in the Bell system to over 17,600,000.

Many of the new stations are of the machine-switching type. In January, 1925, there were 933,000 Bell-owned machine switching stations. By January 1, 1926, this number had increased to almost 1,500,000, and now, January 1, 1927, the number is about 2,000,000.

The Bell system will have expended by the end of the year nearly $400,000,000 for the extensions and replacements necessary to meet the service requirements.

1926 Construction Program.

Aside from the completion of many important telephone plant projects, the year witnessed the completion of several notable buildings. Two of these—the administration buildings of the New York Telephone Co. in New York City, and of the Southwestern Bell Telephone Co. in St. Louis—were opened for occupancy in 1926. The first named is 32 stories above ground and the second is 30 stories above ground.

A similar administration building in San Francisco has been erected recently by the Pacific Telephone & Telegraph Co., and another one in Cleveland for the Ohio Bell Co. is fast approaching completion.

The size of these structures does not, of course, reflect a desire for large buildings, but rather indicates the vastness of the enterprise. An appreciation of this is obtained when it is realized that the aggregate plant investment of the four companies whose administrative staffs are housed in these buildings is over a billion dollars.

These four buildings represent different treatments of the new architectural design that has been developed in America to give beauty and distinction to the so-called "skyscrapers."

Cable Construction.

Over 1,800 miles of toll cable were added to the Bell system in 1926. One of the notable projects completed during the year was the extension of the New York-Chicago long distance cable, that was put in service last year, to St. Louis by the completion of the 344-mile link between Chicago and St. Louis. This link, which cost $7,000,000 to complete and was over two years in construction, was opened for service on December 15.

Like the New York-Chicago section, the extension to St. Louis furnishes about 250 telephone channels and several hundred telegraph channels, all of which provide a high-grade service. The type of construction followed throughout the route of the cable makes the cable virtually immune to storm damage.

The cable contains circuits for short-haul toll traffic as well as through circuits connecting St. Louis with Chicago, New York, Boston and Washington. The longest circuits of the network are about

1,500 miles in length, but this does not represent the physical limit over which circuits can be operated, as has been evidenced by the satisfactory operation of cable conductors when looped out and back for experimental purposes.

Carrier Current.

About 65,000 miles additional carrier channels were added during the year, divided about equally between telephone and telegraph channels. Considerable progress was made during the year in the application of the carrier current principle to relatively short toll circuits. Successful trials have been made over distances 100 miles apart and are proving economical under many conditions in connection with the special apparatus that has been developed in the Bell Telephone Laboratories.

The carrier current principle has also been applied to the submarine telephone cables connecting the Island of Catalina, which lies off the California coast, with the mainland. In addition to the normal voice frequency channel, six carrier telephone channels are superimposed on a single cable. The length of the cables is 26 miles, and the system now in use employs carrier frequencies ranging up to about 26,000 cycles.

Another Transcontinental Line

Long distance telephone communication with the far Northwest will be greatly improved by the recent construction of a northern transcontinental line, which passes through Minneapolis, Bismarck, Billings, Helena and Spokane, and terminates in Seattle.

The through circuits consist of four wires comprising a phantom group and supplying three telephone channels. In addition, these wires carry ten duplex carrier telegraph channels, as well as the standard duplex telegraph channels.

Wire Transmission of Pictures.

The scope of the American Telephone & Telegraph Co.'s telephotograph service, which for two years has utilized circuits between New York, Chicago and San Francisco, has been materially enlarged by the installation in 1926 of both transmitting and receiving equipment in Boston and Cleveland. Early in 1927 the service will be extended to St. Louis, Atlanta and Los Angeles.

Already the value of the telephotograph service for the transmission of news pictures, advertisements, commercial documents, etc., has been demonstrated on many occasions. The complete chain of telephotograph stations as planned is certain to be a notable addition to the nation's facilities for carrying on its commercial activities.

Transatlantic Telephony.

Early last March, a public demonstration of two-way transatlantic radio telephony was given when New York newspaper representatives carried on conversations for a period of four hours with a similar group of press men in London who were invited to participate in the test.

Noteworthy progress was made during the year in studying the conditions which must be met in order to establish commercial transatlantic radio telephony. Daily tests were inaugurated late in the year involving routine calls between telephone representatives in London and in New York. The success of the testing program gives promise of the opening of commercial service between the two cities early in this month.

Bell Telephone Laboratories.

The continuous research carried on in the Bell system for the purpose of improving and extending telephone service resulted during the year in several noteworthy developments. Particularly notable among these is the permalloy loaded submarine cable.

Among the by-products of this research are various devices to help those of impaired hearing, improved system of phonograph recording and reproduction, and the Vitaphone, which consists of a combination of the Bell system public address system and the improved phonograph, synchronized with motion pictures.

In Other Parts of World.

In other parts of the world telephone facilities were in great demand. In August, London installed its 500,000th telephone. Great Britain expected to have more than 1½ million telephones in service by the close of the year.

The British Post Office Department is embarked upon a five-year program of telephone construction and England's telephones are now showing a healthy increase each year. There are now several submarine cables connecting Great Britain with the Continent and some new long distance lines have been opened between leading cities within the year.

In March, direct telephonic communication between London and Berlin was opened and since July a continuous day and night service has been in operation.

An international committee is also at work in Europe on developing a system of long distance lines. Although many problems are encountered, progress is being made in this direction. F. P. Valentine, assistant commercial engineer of the American Telephone & Telegraph Co., is an American engineering representative on this committee.

In Germany the telephone is becoming an increasingly serious rival of the telegraph, and is expanding. The demand for telephones is heavy, and about 30,000 are on the waiting list for them.

In January the number of stations totaled 2,500,000, which represented an increase of 11.2 per cent compared with the previous year. By the end of March another 50,000 stations had been added.

In Spain, considerable progress has been made in the rebuilding of the telephone lines and the rehabilitation of telephone exchanges, as a result of the government turning the operation of the telephone system over to a private organization. It is understood that several of the other governments are contemplating arrangements with private companies to provide their telephone service.

The Japanese telephone system has made rapid progress since the destruction of so many exchanges by the earthquake about two years ago. There are now more than 400,000 telephones in service and some 200,000 applications for telephones. New equipment is being installed under a specified yearly program. Long distance lines have been built and traffic over them is increasing rapidly.

In Mexico, long distance lines are being built and the exchanges in a number of cities and towns modernized. With completion of the construction of long distance lines in Mexico, it is expected that telephone service between Mexico City and points in the United States, such as New York City, will soon be inaugurated.

These are a few instances indicating the telephone progress being made in foreign lands. The same progress is being made in practically all parts of the world.

In connection with this telephone development outside of the United States, it is pleasing to note that American interests are taking an active part and cooperating with the foreign interests in financial, engineering and management matters.

Automatic Telephone Fundamentals

This Is One of Series of Articles Explaining in Simple Terms the Mechanical and Electrical Basis of the Strowger Automatic Telephone System, Which Will Appear Each Week in TELEPHONY—Part 1, Skeleton of the 100-Line System

By Arthur Bessey Smith, Ph. D.

It is the object of this series of articles to deal with the simple principles of Strowger automatic switching. This will include a conception of the system, the arrangement and relation of its parts, the mechanism of the switches and their electrical circuits.

Many people have supposed that the automatic system is very difficult to understand, and that it involves a great many complications. As a matter of fact, this is not true, for automatic telephony is founded upon simple principles easily understood by any competent telephone man who will read this series.

We shall analyze it into its parts and explain the mechanism and circuits as clearly as possible. To this interesting subject the careful attention is invited of every live, up-to-date man who is connected with the telephone industry.

Objects and Duties.

The object of any telephone system is the transmission of speech. The switching of lines is incidental to the main object, but is highly important. Since modern telephone business depends to a very large extent upon the handling of a large number of calls within the exchange district, we need to perform the switching act as quickly and accurately as possible.

With respect to the transmission of speech, the simplified diagram as shown in

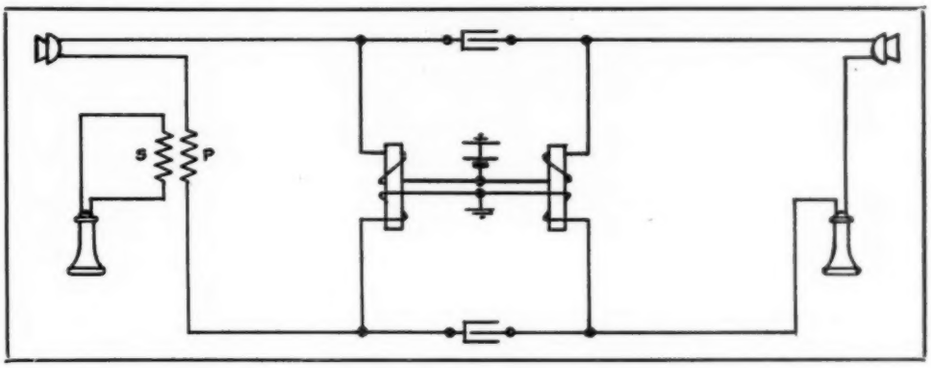


Fig. 1. A Typical Telephone Transmission Circuit.

Fig. 1 will be of interest. This diagram shows the bare essentials of a line connecting two subscribers. The current is supplied to each telephone through the windings of line relays shown at the center. The calling and called lines are joined by condensers. This will be recognized as the well known impedance - condenser system.

The telephone at the left is equipped with an induction coil, *P S*, and a polarized receiver. The telephone at the right consists merely of a transmitter in series with a non-polarized receiver. We shall have more to say about these transmission details at a later time.

For the purpose of explaining the automatic system we shall separate it into three divisions which are as follows:

1. The grouping of lines and connecting trunks.
2. Switching mechanism.
3. Electrical circuits.

It is entirely possible for a person to gain a very good idea of the broad lines upon which automatic telephony is founded by a study of trunks alone, accompanied by a meager knowledge of the details of mechanism and circuits. The latter are more or less incidental and are very flexible to meet any demands. For this reason we shall first take the grouping of lines and the arrangement of trunks, introducing here and there such matters as will prove interesting and valuable.

In explaining the fundamental principles of a 100-line system attention is directed to Fig. 2. In the upper part of the diagram are shown 200 straight horizontal lines arranged in pairs. The pairs are further arranged in horizontal and vertical rows. Let us imagine that each little line represents a metallic contact, and that each pair is connected to pair of wires leading to a certain telephone.

Two of these telephones are shown in the diagram, and it will be easy for the reader to imagine the other 98. This assembly of contacts we shall name the "connector bank." In practice these contacts are arranged on part of the surface of a cylinder, the vertical rows being parallel to the axis of the cylinder.

At the lower left-hand corner of the bank, two wipers or springs are shown. These are wired to the telephone, which for the time being we shall name the "calling telephone."

It is very easy to imagine these wipers being lifted to any level and afterwards moving into contact with

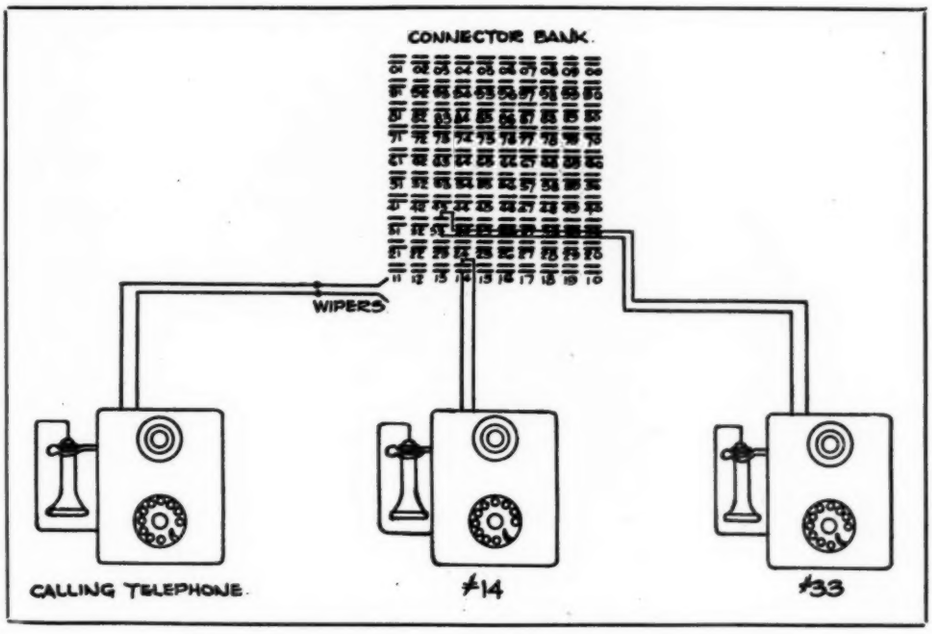


Fig. 2. Number Plan in the 100-Line Automatic System.

any pair of plates in the bank. For instance, we may desire to call telephone No. 14. If we lift the wipers one step and rotate them four steps, we are bringing the calling line in connection with telephone No. 14.

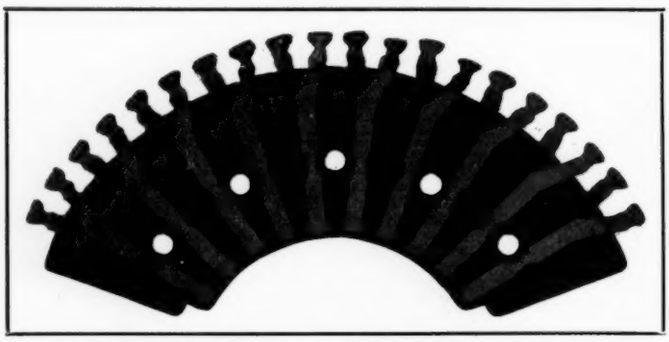


Fig. 3. One Level of Bank Contacts.

On the other hand, to connect with telephone No. 33 we must lift the wipers three steps and rotate them three steps. The number of the telephone line is dependent upon the number of steps required to bring the wipers into touch with the bank contacts.

The tens digit of the called number represents the horizontal row or level. The units digit represents the individual pairs of contacts in the level. Thus the numbers beginning with 1 are in the first or bottom level, the numbers beginning with 2 are in the second level. This causes the figure "naught" to be used to represent ten steps, so that the top or tenth level will be indicated by the figure "naught"; also the tenth pair of contacts in each level will be indicated by the figure "naught."

This gives rise to a peculiar order in the succession of numbers. Beginning with the bottom row at No. 11, we proceed through 12, 13, 14, 15, 16, 17, 18 and 19, followed by 10. This apparent drop of figures from 19 to 10 instead of passing on to 20 is caused by using "naught" to mean ten steps. The numbers on each level succeed each other in the same way, as, for instance, on the second we proceed with 27, 28, 29 and 20, passing up to the next level 31, 32, etc.

Bank and Wipers.

In Figs. 3 and 4 are shown some of the details of the connector banks. In Fig. 3 will be seen a single row of contacts. The inner ends are the portions upon which the wiper rests. The outer ends are notched on each side so as to form a convenient head for the attachment of wires.

The black section is the insulation, which is made of empire cloth and phenolic plate so as to give as high an insulation as possible. The holes shown in the insulation are to accommodate the machine screws with which the different layers are clamped together.

In Fig. 4 is shown the complete bank. This view shows the two steel plates between which the layers are clamped. Each plate has two holes through which pass the bank rods when the bank is assembled on the switch.

In order to separate the contact terminals from each other, they are formed obliquely as shown in the single row at the left in the illustration. The row immediately below has its terminals leaning in the opposite direction so that the rows alternate and are thus more widly separated, reducing the chance of crosses getting in between them.

The wipers, together with the shaft upon which they are mounted, are shown in Fig. 5. The wipers consist of springs punched out of sheet metal and clamped by a locknut on a hub, which is fastened to the shaft by a set screw. The two line wipers are separated by hard rubber. The shaft itself is made of steel drill rod, which insures strength and accuracy.

(To be continued.)

Guests of Honor at Pioneers Dinner in Omaha, Neb.

Mrs. Mildred Lothrop and F. H. Forrest were guests of honor at the annual dinner of Casper E. Yost chapter No. 19, Telephone Pioneers of America, recently held at Omaha. Mrs. Lothrop received a Vail medal for heroic conduct when a flood descended on that town on May 31, 1920. Mr. Forrest was similarly honored for rescue work performed on the same occasion.

Among the other guests at the dinner were Isaac Lovett, city electrician of Omaha, who was one of the earliest employes in Boston of the Bell company, nearly 50 years ago, when the invention first took commercial form, and W. T. B. Belt, president of the Northwestern Bell Telephone Co.

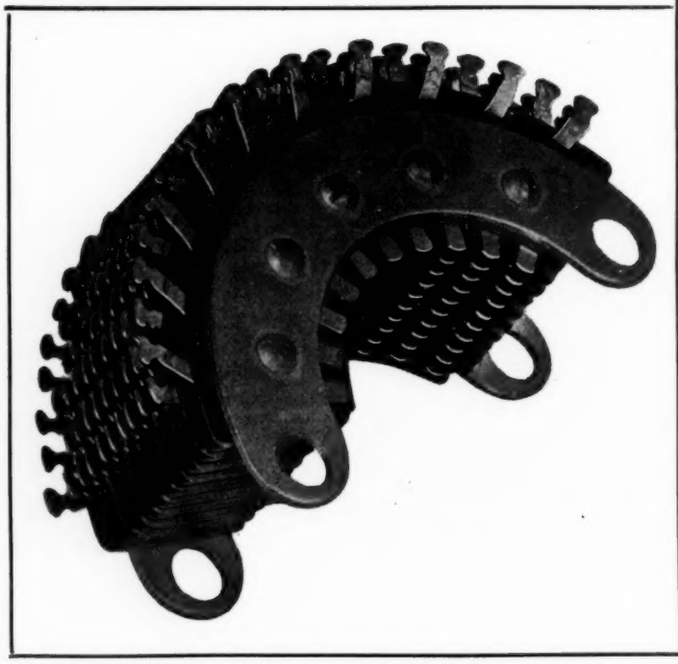
Motion pictures showing the progress of the telephone industry from its inception 50 years ago, to its present-day improvement were features of the program. The chapter embraces both Nebraska and South Dakota telephone pioneers, and its name is that of a former president of the Nebraska Bell Telephone Co.

Carroll Spring, retiring president, was given a vote of appreciation for his administration, and the following elected officers for the year: President, A. S. Kelly, Omaha; vice-presidents, Paul H. Patton, Omaha; Emma A. Cumming, Fremont; Walter Holman, Omaha, and W. E. Bell, Lincoln; secretary-treasurer, William Cosh, Omaha.

Thankful for "Wrong Number"—It Saved Their Lives.

Mistake in a telephone call proved to be a guardian angel to Mrs. W. W. Rowland and daughter, Stella, in their home at Hobart, Okla., recently, saving them from asphyxiation from natural gas. Feeling sleepy, Mrs. Rowland and daughter lay down and were almost in a semi-conscious condition when the persistent ringing of the telephone aroused Miss Stella.

After answering the telephone, which rang by mistake, she stepped over to the mirror and discovered that it was covered with a mist. She then began to realize that something was wrong and at once aroused her mother, and got her to the outside fresh air.



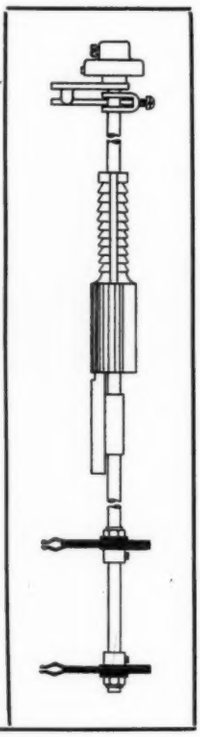


Fig. 4. Line Contact Bank.—Fig. 5. Shaft and Wiper Assembly.

"Three - Legged Stool"—A Cashier

Commercial Representative, in Contact With the Public Represents a Stool With Three Legs or Departments, Commercial, Traffic and Plant—Paper Read at Traffic Conference Held During Convention of Illinois Telephone Association

By Miss Ethel Culbertson,

Illinois Telephone Co., White, Hall, Ill.

In attempting to discuss this topic "The Three-Legged Stool," I am relieved of the necessity of explaining just what it means because everybody, everywhere, and all the time, well knows just what a three-legged stool is and what it is for.

Everybody understands that a three-legged stool is a definite institution, designed for a definite purpose; that a three-legged stool must have three legs, and that in order for it to function for the purpose for which it is designed—to be sat upon—it must have all of the three legs all the time, because a three-legged stool will not stand up on any less than three legs, and its failure to stand up would unfit it, in whole or in part, for the use for which it is intended.

A father once wrote a letter to his son who was in college describing how, by mistake, the boy's mother had tried to start the morning fire in the cook stove by using gasoline instead of kerosene. He went on to describe how the old home had taken fire, how the fire department had been called, how both he and mother had refrained from telling the fire department just how the fire started.

He described just how the old home was damaged, and advised the son that the chief of the fire department had come to the conclusion that the fire was the result of spontaneous combustion. The father, not knowing the meaning of the term, closed the letter by saying: "Son, it seems to me that 'spontaneous combustion,' is a pretty mean name for that fire chief to call your mother."

There are telephone people who might feel that "a three-legged stool" is a pretty mean name, or at least a pretty common name, to call a commercial representative of a telephone company. However, commonness of name does not detract from the usefulness, likableness or even the dignity of those bearing that name, for Illinois' most famous man of all time said: "God must have liked the common people, because he made so many of them." Please understand me when I say that I am making no apology because of the fact that the name "the three-legged stool" is applied to commercial representatives, because a three-legged stool is a mighty useful, if not an ornamental institution.

The commercial representative of any telephone company, whom, for the sake of brevity, we are hereafter going to call "the cashier," is in reality a three-legged stool, if she functions properly. This is because she represents in her contacts with the public, the stool, which is the company's business, supported by its three legs —the commercial, the traffic and the plant departments.

Every cashier of a telephone company represents, first, the commercial department in the capacity of being able to determine just what subscribers' accounts actually are, how much has been billed against the subscriber, how much has been paid and how much still remains due.

SUCCESSFUL OPERATION DEPENDS UPON—

The railroad rests its hope of successful operation very largely upon organization, discipline and continuity of employment. It must have a continuous policy, a history personal in its character, and an esprit de corps founded on mutual experience, respect and confidence.

Here, as in other fields, the whole is not merely the sum of all the parts, but the sum plus the interaction of the parts, regulating, inhibiting, stimulating, multiplying their effectiveness and force.—L. F. Loree, president, the Delaware & Hudson Co.

In case of a misunderstanding, she must be able to go back to any determined date in the past and trace up the history of the commercial transaction between the subscriber and the company. She must understand the methods of billing rentals, tolls, and what-not, to be able to explain intelligently to the subscriber just why a toll charge made a week ago does not show up on the current month's rental bill.

Sufficient knowledge of the activities of the commercial department, and the power and willingness of pleasantly explaining to a subscribing-public successfully, constitues the first leg of the three-legged stool.

Too, a successful cashier should understand, at least to a reasonable extent, the traffic operations of a telephone company because there are so many things that can happen in the traffic operations to displease a subscriber. The traffic department does not come into direct contact with the subscriber; consequently, disconnections during a conversation, poor transmission, interruptions, or any other failure of communication will never be explained to the complaining subscriber, unless it reaches him through the hands of one who meets the public, and this is the commercial representative.

She has a mighty important position with her telephone company, and I am just wondering how long a telephone company could stand up if the cashier, who has direct contact with the public, would try to pacify that public by laying the blame for any failure of the service upon the traffic department, or any other department?

As a commercial representative of a telephone company, I can speak only for myself. Time and again, when a subscriber has complained of the service, I have taken the time and trouble to show the subscriber the switchboard, show him how connections were made, show him how supervision might have failed, show him how it was possible to have a bad cord, a bad plug, or a bad jack in the board, and have explained to him how his service might have been unsatisfactory and still not have been the fault of any one person connected with the telephone company. And for taking this time and trouble, I have been repaid twice: First, because the subscriber was better satisfied; and, second, because I relieved from blame those who were really innocent.

Do not misunderstand me: I would not attempt to shield those who were, willingly or unwillingly, negligent, discourteous or inefficient in the rendering of good telephone service; and I believe that the traffic department should in reality be a second leg of the three-legged stool. I believe that the operators constituting this second leg of the stool, should be right up on their toes and that they should be held responsible for that department, and I would not, knowingly, make an effort to exonerate them from blame if I believed that the blame for poor service really rested on them.

The third leg of the stool in telephone operations is the plant department—and the successful commercial representative must have it in mind and represent it properly to the public. Like the traffic department, the public generally, does not meet the repairman or construction man face to face; and the only way in which the public can meet this department is through the cashier's office.

A familiar knowledge of this department's activities will enable the commercial representative to meet the public much more intelligently. Let us suppose a case, which is not unreasonable, that a prospec-

tive subscriber comes to the cashier's window and asks to have a telephone installed.

Most commercial representatives are glad to take orders for new telephones. But before doing so, I would feel it my intelligent duty to inquire of this prospective subscriber, especially if rural, how far it was from our nearest line to his home, whether or not my company would be expected to build across private property to reach him, whether he was a landowner or not, and such other information as would enable me to intelligently determine whether or not it was reasonable for my company to attempt to furnish him service.

All of this information, of course, I would expect to obtain in a pleasant, discreet, agreeable way, without leading the prospective customer to think that I was requiring him to furnish a complete pedigree of his life before obtaining telephone service.

Why would I obtain all this information? Simply because before facilities can be furnished him the plant department will have to know these facts—better soon than later. Maybe it is not practicable to furnish him service at all; maybe he lives a mile and a half from our nearest telephone line; and to reach him the plant department would have to build a line so long and so expensive that the company could never hope to receive a return on the investment.

Just a few incidental observations and I am through; "incidental" perhaps because they are not really a part of the commercial representative, but important surely because they enter into and have an effect upon the relation of the commercial representative to the public.

In the first place, I believe a commercial telephone office ought to be clean—clean windows, clean floor, clean walls, clean furniture and fixtures, a settee or chair free from dust for the visiting subscriber to sit down upon, if he so desires, and the cashier's desk in an orderly condition.

So thoroughly am I convinced that these things are important that, if the local exchange manager of my company did not see to it that our commercial office showed some evidences of housekeeping, I would have it done, even if I had to roll up my sleeves and do it myself, because I would like to have the visting subscriber to feel and believe that I knew how to conduct a commercial office in an orderly fashion.

The cashier is sadly lacking if she fails to take into account her personal appearance. She need not be gaudily dressed, and, in this day and age of the world it is unnecessary to warn her against being over-dressed. What I refer to more specifically is that she should be neat and clean, and in every way strive to present a wholesome appearance.

The matter of meeting the approaching customer is not a small thing and the old adage of "Well begun is half done" is just as applicable in this case as in any other; especially, if the customer has some grievance on his mind. We never know what is in the other fellow's mind and are often mistaken when we assume that the other fellow is in just as pleasant a mental attitude as we, ourselves, are.

Mr. Brown opens the front door of my commercial office; he is coming for several different purposes: First, he is coming to the office to pay his bill, because he knows it is the last day a discount can be obtained and he feels sort of compelled to pay today—he feels sort of driven to it, and a driven man is seldom a happy man.

Second, he wants to complain about that 45-cent toll, because he knows the rate to the station where his wife talked is only 25 cents and she has told him that she is positive that she didn't talk over two minutes, when there is 20 cents over-time.

The third thing that he wants to settle up is the fact that when he called for half an hour for a party on a certain line, every time he called he was told that the line was busy. The next day he saw this same party and was advised that this party was sitting right at home the very hour he called, and nobody was talking on the telephone.

The fourth thing he has in his mind is that he is satisfied that there is a toll on his bill which has been charged to the wrong number, because he doesn't know any such person as the one named.

In addition to these four matters, which he has to settle up with the telephone company, he has just discovered that his house will have to have a new roof before the winter is over; he had a disagreement with the grocer yesterday about a bill; and the very last words that he and his wife had when he left home this morning would not look well in print.

Now, friends, is there any doubt in your minds as to whether or not it would be possible to start a rumpus with Mr. Brown while his mind is loaded up to capacity with all these troubles? With him, the snap of a finger would set off a mighty explosion, because he is just in that attitude of mind where he would feel a lot better if he could get from under some of the excess pressure.

You and I have been there many a time and, to my way of thinking, any mortal, who has not had his or her blue days, has missed half of life. The difficulty is that we do not recognize this Mr. Brown when we see him; therefore, I believe it is my courteous duty that, just as soon as Mr. Brown opens the door, I quit whatever I am doing, get up from my office desk, go to the window, speak pleasantly to him, whether he speaks first or not, and otherwise show a disposition to meet him half-way in the troubles which are besieging his mind.

I have no patience with the cashier who will sit in her chair at her desk until the customer comes up to the office window and who waits for him to tell what he wants. I candidly confess that, when I go into a store to make a purchase, I like somebody to give me attention and seem interested in what I want. My opinion is that, the world over, humanity is all made out of about the same kind of goods.

I do not mean that I am going to agree and consent to every claim that Mr. Brown is going to make against my company, because my company does not take the attitude that the customer is always right; but I will meet Mr. Brown half-way, and will do it pleasantly.

He and I will take up each claim which he has against our company and settle it on its own merits. If I have made a mistake, I will frankly admit it to Mr. Brown and will require the same of him. It does not humiliate nor embarrass me to admit that either my company or myself has made a mistake, and I will try to prove to Mr. Brown that we are just as anxious to rectify that error as he is to have it rectified.

My attitude as a commercial representative is, and must be, one of fairness; if I am shown I am wrong, I will promptly give in. On the other hand, I do not propose for Mr. Brown to put anything over on me that is not fair to my company. Mr. Brown may be one of the chronic complainers who is looking for a discount every time he pays his bill. If such he happens to be, I have a record of him—and if he bears down on the subject of discount strong enough, then in self-defense I will remind him in a pleasant way of similar stunts which he has tried to put over in the past.

The commercial representative's path is not strewn all the way with roses. Yet it is not a position for which we need to apologize, nor one of which we need be ashamed. I am not ashamed of my position; on the other hand, I am proud of it and proud of my company.

And I feel that when the honest, earnest, courteous telephone cashier has served out her days in this life the best she knows how and is going to her reward in the beyond, she is going to hear these words: "Well done thou good and faithful servant; thou hast been faithful over a few things, I will make thee ruler over many things."

Large Cities Have Greater Telephone Density Than Smaller.

Telephone statistics show that 46 per cent of all telephones in the United States are in cities having a population of 100,000 or more.

The number of telephones to each hundred of population in these larger cities is 19.1 as compared with only 11.6 telephones to each hundred of population in the smaller cities.

Sundry Snapshots Along the Trail

Observations and Comments, Pertinent and Otherwise On the Sunshine and Shadows of Telephone Work

By Well Clay

To you, the room seems empty,
  But ah! how little you know
How full it is of memories
  Of the days of long ago.

To you, the room seems shabby,
  But only a mother can know
How full it is of the presence
  Of children of long ago.

The furniture may seem a bit shaky
  And the rugs a trifle worn;
The windows cracked in places
  And the paper soiled and torn.

The bed may sag in the middle,
  And the bookcase behind the door
Be filled with dog-eared volumes;
  All this you may see—and more.

But you see not the long-gone children
  That romped here on rainy days,
Nor hear the noise of their prattle,
  Or remember their childish ways.

You never visited it nightly
  To see if they were safe asleep,
Nor prayed as they slumbered unconscious
  For the Heavenly Father to keep.

No, you see it unused and empty,
  With naught to lighten its gloom;
But to Mother it's a shrine to cherish;
  To her it's the "Children's Room."

As we look back over a telephone experience of years we cannot help but contrast the facilities of today with those with which we had to work in earlier days. While we know the new materials are the best, we often hate to tear out the old familiar installations that have been friends for years and have given good service at times required.

Like the old switchboard, it seems wrong somehow that they should be reduced to mere junk and sold as scrap after having been the live, vital means of communication they have for years; like the very heart, as it were, of the message circulation of the community.

In the Telephone Business We Build and Rebuild and Then Add to and Enlarge—Then We Keep Right On. Our Facilities Are Constantly Growing Better.

However, the onward march of progress always sweeps away the old, and the endless currents of time bring back the past no more, except in the minds of those who have had a hand in the scenes that once were. Like the farmer of old we must tear down and build greater, and in this we cannot help ourselves, if we are to stay in the game.

That being the case, we might as well tackle the job with a clear conscience, knowing that the work of the present day will also soon be obsolete but that it will have served its purpose in the onward march of human events. We are not as bad off as some lines of business, at that. Think of the newspaper game; all the news which it has so laboriously and so expensively gotten together in yesterday's paper is valueless today for news purposes.

In the telephone business, we build and rebuild, and then add to and enlarge—then we keep right on. Our facilities are constantly growing better, and modern inventions make easier our road to serving a much larger number of people than was possible years ago.

Good roads, automobiles, more accurate and dependable measuring and testing devices, common battery boards, better training of operators, better understanding of what the telephone is for—all have been of tremendous influence in keeping up the service and keeping down unit costs in the last few years.

In reviewing these things, we begin to see that while the apparently ruthless casting aside of old things and the seemingly iconoclastic system of constantly tearing down of old institutions look like wasted energy, yet it is but the well-marked and clearly-defined pathway to improvement and necessary standards of modern facilities.

So let us not pine over seemingly wasted capital and junking of apparently good equipment but, rather, consider it as having rendered good service in its day, and pass on to better things.

That is the history of the world—electric lights are much better than candles, but we still use candles for decorations.

APHORISM: A new suit gives you better courage.

Let Us Not Pine Over Seemingly Wasted Capital and Junking of Apparently Good Equipment; Consider It as Having Rendered Good Service in Its Day and Pass on to Better Things.

North Carolina Company to Be Taken Over by Bell.

Announcement made on December 7 by officials of the Southern Bell Telephone & Telegraph Co. that it has absorbed the Piedmont Telephone & Telegraph Co., of Gastonia, N. C., and will take over the active management on January 1.

This was consummated at an executive meeting of the stockholders and directors of the Piedmont company, meeting with officials of the Southern Bell company on December 6. Every share of stock of the Piedmont Telephone & Telegraph Co. was purchased by representatives of the Southern Bell.

According to a statement made by Southern Bell officials there will be no change in the personnel of the local staff.

The Piedmont company's exchanges cover seven counties, namely: Gaston, Lincoln, Rutherford, Cleveland, Catawba, in North Carolina and York and Cherokee counties, South Carolina. R. B. Babington is general manager of the company, having held this position since the company was organized about 20 years ago.

Texas Convention to be Held in Fort Worth, March 15-18.

Announcement is made by Secretary L. S. Gardner that the Texas Independent Telephone Association will hold its 22nd annual convention on March 15, 16, 17 and 18. It will be held at the Texas Hotel in Fort Worth.

Mt. Olivet County System Purchased by Northern Kentucky.

The Robertson County Telephone Co. of Mt. Olivet, Ky., has sold its lines which extend all over the county, together with its equipment and supplies, to the Northern Kentucky Mutual Telephone Co. which has offices at Augusta, Ky.

The Strowger Fundamental Plan

by B. D. WILLIS
Assistant Chief Engineer, Automatic Electric Inc.

THE fundamental plan of the Strowger system does not concern itself with the various types of non-numerical switches employed to afford the telephone users' lines entrance to the numerical selecting switch train, but deals solely with the manner in which a line-to-line connection is set up by means of progressive selection of trunk lines linking into and through switch groups and sub-groups arranged on a decimal basis of subdivision.

Under this plan a group of one hundred telephone line terminals is arranged on the connector switch in ten rows with ten sets of terminals in each row. These one hundred sets of terminals are multiplied through the terminal "banks" of all connectors serving the group. All connections to a particular one hundred lines must be completed by connectors serving this group.

Ten of these groups of connectors are needed for the purpose of handling the traffic to the various "one hundred groups" of each particular thousand-line section. Carrying the development of this arrangement further, ten one-thousand sections constitute a unit, so that the terminals of line 32,698, for example, are the eighth pair in the ninth row of the six hundred group of the second thousand section of the third unit.

The two types of switches used in Strowger systems, one affording group selection over multiple paths ("selectors") and the other affording individual terminal selection ("connectors") are so well known as to need no comment. No great stretch of imagination is required to apply the two types of mechanisms to the group and numbering arrangement just outlined, and thus visualize the Strowger fundamental plan.

It is all so simple and direct that the uninitiated may well ask, "How else might this sort of thing be done?"

A brief survey of two other plans which have been developed will be outlined for the purpose of bringing Strowger methods into sharper relief.

These systems are founded on the apparently perfectly sound theory that the greater the terminal capacity of each switching mechanism, the fewer such mechanisms will be required to render service to a given number of lines.

If the traffic demands ten connectors in each group to provide for the maximum number of simultaneous connections in each one hundred line group, ten groups, or a total of one hundred switches must be provided for 1000 line terminals. If connector switches having a bank capacity of five hundred line terminals be employed, but two groups of switches will be required.

It has been fairly well established by observation, as well as by mathematical calculation based on the laws of probability, that thirty switches operating in a five hundred line group will provide a traffic capacity per switch equal to that of ten switches operating in a one hundred line group. Therefore, for each one thousand line group either one hundred switches of one hundred line terminal capacity, or sixty switches of five hundred line terminal capacity will serve equally well.

Each switch in any group must have a set of bank terminals for each line of the group. Therefore, each switch having a capacity of one hundred lines requires 200 line terminals, plus 100 guarding terminals, or a total of 300 banked contacts. As one hundred switches are required in a thousand line group, the total number of banked contacts required is 30,000. Each switch having a capacity of five hundred lines requires 1500 banked contacts, and the total number of banked contacts in a thousand line group on this basis would be 90,000.

The Strowger system is often referred to as the step-by-step machine switching system because each operation of the telephone dial results directly and immediately in the advancement of the connection one complete step. Machine switching systems of the non-decimal type, which make use of switches of large capacities, differ radically from the Strowger system in operating characteristics.

In routing a connection through the switch groups, the accepted method for non-decimal systems is to record the full call number as dialled on a registration device, and to translate the registered number into coded polarized current pulses, which operate the switching mechanism. These systems must, therefore, have an adequate number of mechanisms for the work of registering and translating the dial impulses.

Systems using switches of large capacity and operating from translated code pulses are electrically interacting in nature. Circuits branching from the main thoroughfares of traffic must be specifically designed to function in harmony with the translating apparatus. In this respect, these systems lack the adaptability and flexibility of the Strowger system.

In the Strowger system the basic characteristic, which has made possible the development of the system along diversified lines, is the step-by-step principle—one step at a time, and each step a complete decimal selection. While this idea is fundamentally simple, the development of the present high efficiency circuits and equipment has required some thirty odd years of engineering study and experimentation, directed by long experience and close observation in the operating field.

This is No. 1 of a series of articles prepared by members of the Engineering Staff of Automatic Electric Inc., covering technical features of the Strowger Automatic Telephone System.

r Automatic Service Is Accurate Service—

ts Careful Design and High Quality in Manufacture

he manufacture of Strowger Automatic telephone ipment, no compromise affecting quality has ever olerated. Only the finest and most suitable mate- re used and the most careful and exacting methods nufacture employed.

esult is a product famed throughout the world for uniform accuracy of performance, and service eminently pleasing to telephone users.

STROWGER AUTOMATIC

Automatic Electric Inc.

Factory and General Offices: 1033 W. Van Buren Street, Chicago, U. S. A.

When writing to Automatic Electric Inc., please mention TELEPHONY.

Here and There in Telephone Work

Sends Dry Cells for Rural Telephones by Parcels Post.

We notice in your "Questions and Answers Department" that you have been discussing installation of batteries in magneto telephones.

We have been using a system of mailing batteries to our rural subscribers for a couple of years now and have found it very satisfactory.

Our system is based on the fact that the operator usually knows when a subscriber needs batteries, before he is aware of it himself. In this case, the subscriber can hear the operator all right, but the subscriber comes up very faint at the central office.

We simply wrap two batteries in a package, attach a shipping label and parcel post stamps and mail a postal card reading:

Dear Subscriber:

Our test shows your telephone needs batteries, and to save delay we are mailing you a set by parcels post today. If you can put these in yourself, we shall appreciate it. If not please keep them until our lineman can get around to you.

Yours truly,
AMENIA TELEPHONE CO.

In two years we have never heard any complaint of this system or found any subscriber who could not attach the dry cells. Amenia, S. D. E. W. CHAFFEE, Manager.

Doings of the Noon Hour Club.

By J. A. BRACKEN.

"Mr. Chairman and co-workers, I am glad of this opportunity to talk about the central office battery, which is often referred to as the heart of the plant," said Tom the senior switchboard man, as he seated himself upon the storeroom stock delivery window.

"The history of practical telephony, we might say, falls into certain, well-defined periods, each of which is marked by some dominant characteristic. Thus, there is the period in which the telephone, as combined into one instrument, flourished; a later period in which it was wholly conducted on the local battery system. Then came the remarkable period which commenced with the introduction of storage battery cells and their application to the development of our present high-grade practice.

For many years, storage battery cells have furnished a commercial method of centralized, electrical energy distribution in the telephone plant known as the 'common battery system.' In the central office the storage battery cells are usually placed in groups forming a battery of the required voltage and current supply needed for the operation of the signaling, switching and other equipment; also to furnish the necessary electrical current to the transmitters at the subscribers' stations, and to private branch exchanges in certain areas.

Approximately 24 volts are used on a line terminating in a manual office, but in certain machine switching offices about 48 volts are standard. A higher battery voltage than this is not used because it is deemed advisable by the plant engineers to keep the telephone line voltage as low as possible in order not to subject the insulation of the wire to the constant electrical stress that would result from a higher voltage, owing to the central office battery current being on the line all the time under pressure of the voltage.

On the other hand, too low a voltage can not be efficiently used either, for it is essential to provide the current required by the transmitters at the stations over the maximum allowable station loop resistance. Further, a voltage that is too low will not supply sufficient operating current for the central office line relay, when the receiver is removed from the hook at the telephone. Should the voltage be too high, the leakage of the electrical current between the two sides of the line, or between one side of the line and the earth, under unfavorable conditions, might be sufficient to operate the central office line equipment. For instance, wet short-circuits, crosses, or grounds will produce this effect.

The use of a common battery located at the central office resulted in an immediate change in the previously existing standards of line construction employed in the local battery system. It was found that standards of line insulation, which were acceptable under the old operating conditions, were far from being acceptable with battery connected direct to the lines at all times. This necessitated that the line wire be well insulated and free from trees and other foreign substances.

One of the most important results of this change in the method of outside plant construction is greatly improved telephonic transmission. As you can readily see, the elimination of low insulation from circuits leading to the subscriber's station will result in improved transmission; and, therefore, the condition of the outside plant must be maintained at a satisfactory high standard. This in turn results in lower line losses, all of which helps to provide your company's customers with the best possible service.

So you see, the improvement in telephonic communication or transmission is principally due to the more nearly uniform current supply to telephone transmitters, effected by common battery operation, together with other developments in central office station equipment and outside plant construction. However, with the very best of equipment installed and line construction applied, it is attended with some transmission losses.

We might suppose that the effective telephonic transmission from station-to-station, or under a given set of line and equipment conditions, is that part remaining after all losses. For instance, a transmission loss is due to the resistance of the station loop decreasing the amount of the central office battery current flowing through the transmitter and, consequently, the transmission efficiency is low. This loss is designated 'current supply loss' and occurs when talking from a telephone. On the other hand, the transmission loss is reduced, within certain limits when the current to the telephone transmitter is increased.

The foregoing, no doubt, makes it plain that the telephone circuit consisting of the switching equipment, main distributing frame, underground and aerial cables, terminals, lines, drops, protectors, interior wiring, and instruments must always be clear of moisture, high-resistance connections, partial and solid short-circuits, crosses or grounds, etc., because proper maintenance in preventing faults of this nature will reduce the total transmission loss affecting any given station connection, within reasonable limits.

The geographical location of a common battery central office exercises considerable influence on its efficiency also. This is due to the restricted operating limits of the current supply to the stations.

Well, boys, in closing I hope that this bit of information will be useful in your daily work."

Prize Contests for School Children on Value of Telephone.

The Remsen-Alton-Granville Telephone Co., with headquarters at Remsen, Iowa, is putting on a story contest for the best story written on one of the subjects, "What is the telephone worth to me?" "What is the value of a telephone to the subscriber?" "What is the telephone worth to us?"

The contest is open to any pupil in any school located in the territory covered by the plant of the telephone company, and cash prizes will be awarded to the winners. The prizes are: Three first prizes, $5 each; five second prizes, $3 each; and 12 third prizes, $2 each.

The usual regulations are included and the contest closes January 10, 1927. Sug-

Continental Company Acquires Two Nebraska Properties.

The Continental Telephone Co. has acquired two more properties, both in Nebraska. They are the Kearney Telephone Co., with headquarters at Kearney, and the Farmers Mutual Telephone Co., of Ord, which owns exchanges at Ord and Burwell, with 2,000 stations and switches for an unusually large number of farm lines. A competing exchange, operated by another farmers' mutual company, is located at Burwell, but the bulk of the business is controlled by the Ord company.

Warren Pratt, one of the pioneers in Independent telephony in Nebraska, and at present head of the state telephone association, is president of the Kearney company. W. L. Clapp is secretary and treasurer and W. W. Johnson, general manager. It operates approximately 3,000 staitons, and does a good switching and toll business, having 150 miles of toll lines of its own. It has exchanges at Kearney, Riverdale and Sumner.

The capital stock of the company is $140,000, of which $90,000 is common. This was purchased by the Continental. The company has a bonded indebtedness of $80,000; property valued at $333,000, a depreciation reserve of $79,000 and a surplus of $24,000. It has been operated at high efficiency, and has been paying dividends regularly.

The Ord company had a peculiar history. The city is located in Valley county, the second county north of Buffalo, in which Kearney is situated. Originally a group of farmers living south of Ord built a number of lines into the city, and hooked up with the company owned by local business men. The farmers north of town also built into Ord, but put in an exchange of their own.

The double system resulted in both companies losing money, but the situation was ended some years ago by the Farmers company buying out the town company. Since then it has done a great deal of reconstruction work, the plant being in excellent condition at the present time.

With increased rates it has been a profitable enterprise. On a capital stock of $36,000 it earned during 11 months of 1925 a net of $4,000. It has property valued at $85,000, a depreciation reserve of $19,500 and a surplus of $20,000. Alvin Blessing is president and O. P. Bailey, secretary and treasurer.

J. H. Agee, vice-president of the Continental and general manager of the Lincoln Telephone & Telegraph Co., conducted in large part the negotiations for the plants purchased. He says the Continental engineers are planning extensive improvements and additions in the properties.

This gives the company a total of 25,000 stations, of which 12,000 are in Nebraska and 13,000 in southwestern Iowa. The company recently acquired plants at important towns like Columbus, Madison, Albion, and Neligh.

MARY JONES CAME BACK

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

She was the telephone operator at Hocum Central. She was a bright, capable and very good-natured young girl—"Easy going," folks said. Everyone liked her, with one reservation, often voiced—she did not seem to care what happened beyond the day she was living. "Mary Jones, she's capable, all right—but you know what her teachers said: 'Mary, you have a lazy mind.'"

There was a great chance for her to advance, as her company, whose headquarters were at Crystal City, was always on the watch for employes to take important positions in the organization. However, she had not worked long at Hocum before her company realized that it would be better to leave her where she was—in the ranks; and there she stayed.

"Too much responsibility. Oh, I'm satisfied," she was wont to say when she heard of an opening now and then.

Then came a crisis in her life. She was seriously injured in a train wreck. One of her arms had to be amputated; fortunately, the left one.

For many weeks she lay in the hospital. During that time, she had much time for reflection. She realized her operating career was at an end. If only she had tried for some good clerical position in her company.

However, her natural cheeriness allowed her no despondency. One day, shortly before she left the hospital, she looked at her one little white hand, lying so pitifully useless, and then smiled and said: "Now, I have a new team-mate for you—a better one. You and my brain are going to work together."

Thus, Mary Jones came back.

University Has Course in Tree Trimming for Linemen.

The question of damage done to trees by the stringing of electric wires has become so much discussed that the New York State College of Forestry at Syracuse University conducted a course of instruction in tree trimming for linemen during the fall. Instruction in the course, started through the efforts of the Empire State Gas & Electric Association, was given from November 15 to 20.

It has been found that damage to shade trees by employes of public utilities is a source of bad feeling on the part of the public. It is said that consumers, who will put up with minor inconveniences inherent in public operation, will become irate at the spectacle of a lineman mutilating trees that have required years of nurture. Since, however, the use of overhead wires frequently necessitates a certain amount of tree pruning, it is felt that utility employes should be instructed in approved methods for this kind of work.

Although the course of instruction at Syracuse was planned primarily for employes of electric utilities, employes of telephone companies and city foresters were invited to take it. Lectures and discussions were supplemented by field trips for study of actual conditions and demonstrations in tree pruning. In addition, the course included a study of tree growth, fungus diseases, tree repairs, planting and moving of trees, sprays and other phases of tree culture.

Kansas Association's Fine District Meeting at Valley Falls.

The Kansas Independent Telephone Association held a most successful district meeting at Valley Falls in November, with Manager B. R. Hinchman of the Delaware Valley Telephone Co. as host.

The new toll rates of the Bell system were explained by E. O. Nelson of the Southwestern Bell system; a talk and demonstration on making wire joints was given by Clarence Kennedy of the Valley Falls exchange; methods of correction of induction interference were discussed as well as the zone system of charges for service in outlying districts.

State Secretary Kraege, of Topeka, explained what the state association is doing toward a standardization of charges and service over the state, as well as the attitude of the utilities commission toward the Independent systems.

Dinner was served at the Wettig hotel, and a group photograph taken of those in attendance.

A school for operators was conducted by Miss Manta Elder, of Ottawa, which was greatly appreciated by all the operators in attendance.

gestions are made in the announcement to stimulate interest and thought in the contest and the prize stories will be submitted to the local newspapers for publication.

Addressograph to Stencil Messages on Backs of Monthly Bills.

By S. B. GREEN

General Manager, Tri-City Telephone Co., Clinton, Iowa.

The idea of using the back of monthly service bills for advertising purposes is not new, but we are using a method which may be new.

Instead of having our advertisement printed, we stencil what we want to say on an addressograph plate and run the bills through the addressograph. This can be done quickly and inexpensively.

Of course it is necessary to limit the message to the size of the plate, but it has been said that "brevity is the soul of wit" and it is possible that more people will read to the end of a short paragraph than would read a longer advertisement.

Here are some of the paragraphs we have recently used:

"Is there a family in your neighborhood who are continual borrowers of telephone service? Give us the name, so we can solicit their business. Your name won't be used."

"An extension telephone upstairs or in a distant part of the house will save many steps. The cost is insignificant—only 50 cents a month. Order one today."

"Clinton telephone service costs less than in any comparable Iowa city. Exclusive patronage of our Independent service will insure a continuance of reasonable rates."

"Do you take full advantage of our long distance service? We reach many points on both Independent and Bell toll lines.—Tri-City Telephone Co."

Radio Brings More Revenue to Electric Light Company.

The widespread use of the radio has increased the annual income of the New York Edison Co. about $1,000,000 through the frequent charging of electric batteries and because those who have radios often sit up long past their usual bedtime.

Arthur Williams, vice-president of the Edison company in charge of commercial relations, told of the company's added income because of the radio while testifying recently before the New York Public Service Commission on a complaint that the company's rates are too high. Part of the work of Mr. Williams is to increase the patrons of the company and to induce patrons to use more current.

Mr. Williams said that the company's expenditures for radio programs represented a most desirable branch of the business-getting activities of the company. He explained that investigations made by the company indicated a growing tendency among radio owners to stay at home at night. Mr. Williams was asked whether the radio had not taken the place of the saloon and replied that he believed it had. He proceeded to explain how the increased consumption of electric current benefited the company by saying:

"We find that many complaints about the lighting bills are more easily satisfied because, when a customer complains about his bills, we ask him if he has a radio. If he says that he has, we remind him that perhaps the radio induces him to sit up later, resulting in use of more light.

The increased use of radios brings us about $1,000,000 more revenue, as far as we have been able to estimate it."

Television Possible with Means Already Known, Engineer Asserts.

A television projector which he believes will result in realization of the dream of radio movies was explained recently by Dr. E. F. W. Alexanderson, consulting engineer of the General Electric Co. and the Radio Corp. of America, in an address before the St. Louis section of the American Institute of Electrical Engineers.

Despite assertions of many internationally known scientists that television is impossible, Dr. Alexanderson declared "our work has already proved that the expectation of television is not unreasonable, and it may be accomplished with means that are in our possession at the present day."

He would not venture a prediction as to when television would become practical.

Dr. Alexanderson, who has accomplished the radio transmission of a single photograph in two minutes, explained that television would require the transmission, reception and reproduction of a single picture in 1/16th of a second.

Dr. Alexanderson's projector is composed of seven light sources which are converged onto a revolving drum which carries 24 mirrors. The mirrors reflect the light cluster to a screen. Use of the seven light beams in multiple reduces the speed of each beam to one-seventh. This makes necessary, he said, only 43,000 independent impressions per second, as opposed to 300,000 brush strokes per second that are necessary for producing motion pictures.

While this speed is high in comparison with present radio practice, he stated, it is reasonable, since it is only ten times as fast as is used in broadcasting.

Standardization of List Directories Increases Revenues.

The Lincoln Telephone & Telegraph Co. is making rapid progress with its plans for the standardization and development of list directories. It expects to show, by the end of the fiscal year, a gross revenue from this business adjunct alone of 80 cents a station for the entire system, where formerly it has been 51 cents.

The company's plans are carefully prepared, with the goal of a gross revenue of a dollar as the mark aimed at. As it has close to 75,000 stations, this means a big increase in both gross and net revenues.

The work is in charge of R. M. Woolfolk, a directory specialist with years of service with Bell organizations and a directory publishing house. The company operates 121 exchanges, and until the revision was begun issued 51 directories to serve the communities. The plans call for a reduction, through consolidation of directories, to a total of 30 or 35.

A standard plate for the outside cover has been adopted, and in the future all directories for the system will look alike, save for the city name. The cover pages, as well as the inside pages, have been stripped of the side and top and bottom advertising lines, and the general volume of advertising in the publication cut about 50 per cent.

The company has already printed standard directories of this type for Lincoln, Hastings, Sutton, David City, Friend, Dorchester, Geneva, Superior, Hebron and Fairmont. That for Lincoln contains the names in three columns, and the others are two columns in width, the larger number of names in the former making it necessary to condense as much as possible.

The names are set in a condensed style of type, from a specially-designed matrix font by the Mergenthaler linotype company. The name is first, then follows the address, with the number set off at the right. This is a reversal of the old listings, which gave the number, then the name and then the address.

The type for all directories is set at a Lincoln typesetting plant, and this aids in maintaining the desired uniformity. The cutting down of the volume of the advertising has been followed by an increase in the revenues, and an additional saving, not mentioning the fact that the books are smaller in number of pages, results from the lessened sales activity necessity to sell the advertising.

Company officials are very well pleased with the results so far achieved, and believe that in time they will be able to give much better directory service to the entire list of subscribers. Further consolidations of exchanges in one book will be made as the experiment progresses. The new listing of patrons gives the logical sequence, as the name is what the user looks for first.

Sac Telephone Co., Sac City, Iowa, Sold to McGraw Interests.

James A. Innes of Sloan, Iowa, proprietor of the Sac Telephone Co., Sac City, Iowa, recently sold his plant to the Central West Public Service Co., of Sioux City, which has acquired a number of plants in northwestern Iowa. Possession of the property has already been taken by the Central West company.

---Which will best serve the interest of My Company---

Paying for losses arising from injury or death to a member of the public or damage to his property caused by our operations and our automobiles, which includes attorney's fees, from our reserve fund,

OR

carry Liability Insurance which will pay for these losses and includes all costs of litigation.

PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE

Public Liability and Property Damage Insurance is your protection and guarantee from claims and resultant money losses arising from injuries and death to members of the public or damage to their property caused by your operations and your automobiles—

Such Insurance combined in one policy as written by Lynton T. Block & Co.

—Pays all costs in event of litigation and judgments that may be awarded.

—Gives you protection even though the claim is a fraudulent one.

—Assures prompt and careful settlement of claims and, where possible, provides for settlement of these claims without regular court procedure.

—A means of maintaining satisfactory public relations.

—Written at a substantial saving in cost to you.

THIS IS YOUR SOLUTION

Ask us for facts and figures

LYNTON T. BLOCK & CO.
ST. LOUIS, MO.
UNDERWRITERS OF SELECTED CLASS INSURANCE
AT A SAVING

When writing to Lynton T. Block & Co., please mention TELEPHONY.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Appraisal Engineers $32,000,000 Apart on Ohio Bell Valuation.

A difference of more than $32,000,000 between the figures on which the Ohio Bell Telephone Co. bases its action for higher telephone rates throughout the state, and those submitted by state experts, was brought out in the rate fight in progress before the Ohio Public Utilities Commission on December 14, when W. J. Hagenah, Chicago appraisal engineer employed by the state, declared the value of the company property, as of June 30, 1925, was $112,342,375.

Mr. Hagenah's figure for reproduction cost new, less depreciation as of the date mentioned was $32,268,866 less than the company's figures of $144,611,241, submitted to the commission some months ago by George Williams, Columbus, appraisal engineer for the company.

Mr. Williams in his previous testimony also had declared the reproduction cost new, of the company on June 30, 1925, was $157,398,880, while Mr. Hagenah told the commission the figure as estimated by him was only $127,373,847, a difference of $30,025,033.

Mr. Hagenah took up the matter of increased expense for property extension during the past five years, and declared that from 1921 to 1925 the book cost per station had increased steadily from $173 to $200.

He justified the higher costs by an explanation of the labor and material price increases, and stated it was his judgment price levels would remain the same for the next three years, citing eight reasons on which he based the assertion. Among these were high wages, high rents and high taxes.

The commission set February 15, 16, 17 and 18 and February 23, 24 and 25 for the further hearing of the case, which adjourned on December 17.

Asks Authority to Retire; Mutual Company Organized.

The Richfield Public Service Co. has petitioned the Idaho Public Utilities Commission for permission to discontinue its telephone service in Richfield, Lincoln county, Idaho. The service has been unprofitable and subscribers are organizing a mutual company to take it over, says the petition.

The company was organized in 1914, and since then has maintained service in Richfield with lines to Dietrich and to Magic dam.

In 1922, says the petition, the corporation's charter to do business in the state was forfeited because of non-payment of the state corporation tax, and since then it was operated on the individual responsibilities of stockholders and trustees.

The users already have formed a mutual company to buy all the physical property and other assets, says the petition.

McLeod County Company Authorized to Purchase Property.

The McLeod County Telephone Co., Glencoe, Minn., of which Jay Greaves is president, has been authorized by the Minnesota Railroad & Warehouse Commission to purchase all the physical property of the Electric Phone Co. used in furnishing telephone service.

The McLeod County Telephone Co. operates exchanges at Glencoe, Silver Lake, Lester Prairie and Brownton, all in McLeod county. The Electric Phone Co. operate exchanges at Stewart, McLeod county and Buffalo Lake, Renville county. The company serves a total of approximately 450 telephones.

The commission found that the operation of the Stewart and Buffalo Lake exchanges in connection with the system of the McLeod County Telephone Co. can be more economically done and as good or better service furnished. No change in the rates for service is contemplated at this time.

Indiana Company Asks for Increases on Two Exchanges.

In a petition filed December 14 with the Indiana Public Service Commission by the Home Telephone Co., Goshen, rate increases in that city and Elkhart are sought to meet the increasing costs of operation.

The company claims a fair valuation of $1,019,143 on the strength of an appraisal made last year by J. K. Johnston, Indianapolis telephone engineer. Additions totaling $50,000 have been made since, it is declared.

At least $75,000 must be spent to meet the increased service demands, the petition alleges. Rates at Goshen and Elkhart were fixed July 1, 1925.

Commission Approval Given to Consolidation in Maine.

An order was issued recently by the Maine Public Utilities Commission authorizing the Rangeley Telephone Co., of Rangeley, to sell and assign its rights, privileges, permits, franchises and property and interest to the Franklin Farmers Cooperative Telephone Co. of Farmington.

The commission's order reads in part as follows:

"The purchasing company is much larger, has a great many more subscribers and its lines cover a much greater area than the Rangeley Telephone Co. Its exchange area includes service with the subscribers of Oxford Farmers Cooperative Telephone Co., People's Cooperative Telephone Co. (Mercer), Somerset Farmers Cooperative Telephone Co., the Rangeley Telephone Co. and the Temple Farmers Telephone Co. In addition its subscribers may, if they desire, obtain service from telephone companies connected with the companies comprising its exchange area.

The Franklin Farmers Cooperative Telephone Co., with its greater equipment and larger operating and repairing forces, should be able to keep the property purchased from the petitioner in good operating condition, so that the subscribers of the Rangeley Telephone Co., if the sale be consummated, must be benefited thereby."

Dismisses Complaint; Offer More Liberal Than Order Could Be.

The complaint of Frank O. Reed and nine others, residents of the town of Windsor, Maine, against the China Telephone Co., was dismissed by an order handed down recently by the Maine Public Utilities Commission. The complainants had alleged that they were unable to obtain service from the respondent company. The order of the commission says in part:

"These complainants are nearly all farmers living in the west central part of Windsor in a comparatively compact group and are entirely without telephone service. Approximately 3½ miles of new line construction, requiring 140 poles, would be necessary in order to furnish the desired service. In addition to this, it is estimated that some new wires will be required on the existing line in order to divide the load. if these new subscribers are taken on.

The estimated cost, to serve nine subscribers is $1,400. The annual revenue to be derived from the extension would be $15 per subscriber, plus whatever toll revenue there might be. It is apparent that the company ought not to be required to make this extension unless the people who desire the service are willing to make substantial contributions towards the cost of the line.

Mr. Thompson, on behalf of the company, offers to make the extension as re-

(*Please turn to page 37.*)

Appraising Versus Engineering

Engineering, the design, construction and operation of property, deals with physical units and mechanical forces. Appraising treats of property in relation to its utility and value. These are dissimilar activities, requiring different experience, personnel, resources and methods.

The American Appraisal Company does not design, build, manage, operate, finance, buy or sell property.

For thirty years it has specialized exclusively in studying property in relation to its utility and value. We believe that this specialization has resulted in a more perfect appraisal service than had we dissipated our energies over a wider range of endeavor.

We know that as in engineering there can be no compromise with the inexorable laws of stress and strain, in appraising there can be no compromise with the basic principles of valuation.

This singleness of purpose and focusing of energy upon the making of appraisals account, we believe, to a large extent for the recognition everywhere accorded American Appraisals.

The American Appraisal Company

MILWAUKEE

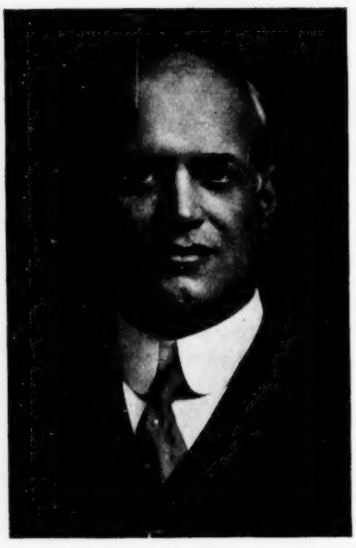
PUBLIC UTILITIES · INDUSTRIALS · REAL ESTATE PROPERTIES · NATURAL RESOURCES

A NATIONAL ORGANIZATION

When writing American Appraisal Co., please mention TELEPHONY.

Personal Notes From the Field

Howard Ford Thurber, chairman of the board of directors of the New York Telephone Co., announced his resignation December 23, preliminary to his retirement on January 1. In accepting the resignation, the board adopted resolutions in



Howard F. Thurber, After Nearly 37 Years of Service with Bell Companies, Has Resigned as Chairman of the Board of New York Telephone Co. and Retired.

recognition of Mr. Thurber's exceptional service to the company.

Mr. Thurber's retirement comes at the completion of nearly 37 years of telephone service during which he rose from an engineering assistant to the highest office in the largest of the associated companies in the Bell system. His entire business career has been spent in the telephone industry in which he has been a leader of outstanding engineering and organizing ability. J. S. McCulloh, president of the company said that no one has contributed more to the upbuilding of his company, than has Mr. Thurber.

Born in Brooklyn, August 6, 1869, Mr. Thurber acquired his early education at the Polytechnic Institute and first became interested in the telephone while a student at Cornell when he attended a lecture by Dr. Alexander Graham Bell. Inspired by Bell's talk, Mr. Thurber chose the telephone business as a life work.

After leaving Cornell in 1890 with the degree of mechanical engineer, he entered the engineering department of the Metropolitan Telephone & Telegraph Co., the predecessor of the New York Telephone Co. At that time the Metropolitan company served but 9,000 telephones in its territory which covered Manhattan and the Bronx. During Mr. Thurber's career the number of telephones in this area has grown to nearly 1,000,000 while in the entire territory served by the company of which he has been chairman of the board, there now are approximately 2,600,000 telephones.

Following three years of apprenticeship, Mr. Thurber was made assistant chief engineer and in 1894, at the age of 25, became general superintendent, an office which he filled for 12 years. He was then appointed general manager of the company and two years later, in 1908, he was elected vice-president and general manager. In 1912 he was elected vice-president of the eastern group of Bell Telephone Companies, operating throughout the Middle Atlantic States.

In October, 1919, Mr. Thurber was elected president of the New York Telephone Co., resigning as vice-president of the Bell Telephone Co. of Pennsylvania and the Chesapeake & Potomac Telephone Co. and their associated companies. He was elected chairman of the board of directors of the New York company in September, 1924.

Mr. Thurber's success has been due not only to an exceptional and detailed knowledge of the telephone business, but also to his ability to select capable assistants and to inspire them with his own ideals so as to produce the remarkable results to which his career bears witness. The most recent of the material results of his vision is the 32-story telephone building at 140 West street, New York, the largest telephone building in the world.

L. E. Peck, formerly plant superintendent of the Black River Telephone Co., Lowville, N. Y., has been made general manager, relieving J. J. Domser.

Mr. Domser has been vice-president and general manager of the company for 28 years and was the originator and builder of the company. He retains his office as vice-president, Mr. Peck taking over the duties of general manager.

Mr. Peck went to Lowville last April as plant superintendent of the company. He was formerly connected with the Northern New York Telephone Corp.

W. E. Harkness, formerly assistant vice-president, A. T. & T. Co., in charge of broadcasting, became a member of the long lines department of the A. T. & T. Co. on November 1. As manager of auxiliary services, he has charge of telephotographs, wire service used in connection with broadcasting, and the development of other auxiliary services.

Mr. Harkness' telephone experience dates back to 1894, when he entered the employ of the old Bell Telephone Co. of Missouri—now a part of the Southwestern company—at St. Louis. His length of service there extended over a period of eight years, the first six of which he was in charge of central office design and installation. The last two he was in charge of traffic and maintenance work.

He next spent two years as an Independent, during which time he was engaged in operating and manufacturing activities. In 1904, he returned to the Bell system by way of the Western Electric Co. at Chicago. His work consisted of special engineering studies, in the course of which he became part of the engineering general sales staff. While he was so engaged, it fell to his lot to have a part in introducing the use of the telephone in train-despatching on railroads.

In 1910 he engaged in outside work. The outbreak of the World War led him, in 1915, to take up consulting engineering work, investigating munitions contracts. This eventually brought him into the manufacturing field, where he specialized in loading and assembling artillery ammunition. In this way he was brought into touch with the British and Russian governments.

This experience proved so valuable that,

W. E. Harkness, Formerly in Charge of A. T. & T. Co. Broadcasting, Is Now Manager of Auxiliary Services, Long Lines Department, A. T. & T. Co.

upon the entrance of the United States into the World War, he was commissioned a major of ordnance on the general staff at Washington. He was placed in charge of loading and assembly of artillery and trench warfare ammunition.

Digs a pole hole 6-ft. deep in 3 min.

SPEED UP AND SAVE

In your line erecting work this year, you will dig a lot of pole holes. If you are digging pole holes consider Buda-Hubron Earth Drills.

While two men finish digging their first pole hole, the Buda-Hubron Earth Drill starts on its eighth. Your Buda-Hubron Drills will soon pay for themselves out of savings.

Through hard-pan, clay or frozen ground, in swamps, under water and on hillsides—anywhere you have to dig—Buda-Hubrons do their work, enabling you to speed up and save.

Write now for Bulletin No. 548-T. It gives actual pole-digging costs and other valuable information.

THE BUDA COMPANY
Harvey, Illinois

The "STEWART" TEST SET
SAVES MONEY

By telling which way and how far trouble is from the tester without opening the line. Saves miles of driving over bad roads, locates trouble quickly and easily.

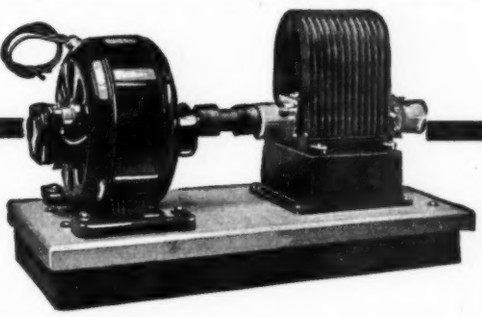
Has transmitter, receiver, generator, induction coil, battery, etc., and talks up as good as a telephone.

One lineman with a "STEWART" Test Set can locate more trouble in a day than two men could without it.

Write for Circular Sent on Trial

STEWART BROTHERS
Makers of Testing Instruments
OTTAWA ILLINOIS

Also Cable Testers, Test Cabinets and Detecto-Meters



Dependable Service!

This ringing equipment never fails. No attention is required except occasional lubrication.

Once installed your ringing troubles are over and your ringing service is 100%.

Send for illustrated circular. Or better still give this unit a test in your exchange. We stand back of it.

The Holtzer-Cabot Electric Co.

125 Amory St., Boston, Mass.
6161 So. State St., Chicago, Ill.

STANDARD
Telephone Wires and Cables

Bare Copper Wire
Copper Clad Steel Wire
Plain Rubber Insulated Wire
Braided Rubber Insulated Wire
Lead Covered and Armored Cables

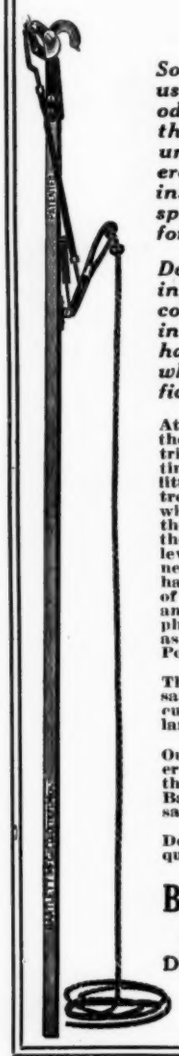
Write our nearest office for complete information.

Standard Underground Cable Co.
Boston Philadelphia Detroit Chicago
New York Pittsburgh San Francisco St. Louis
Washington

Linemen Learn Tree Trimming

Syracuse University in a special course instructs telephone linemen in the approved method of trimming trees.

No. 1 Cutting Head in Detail



So important is the use of approved methods for tree trimming that a large Eastern university has considered it advisable to instruct linemen in a special course offered for that purpose.

Do you, when sending out your linemen, consider the damage, inconvenience and hazard encountered when employing inefficient tools?

At the left, illustrated, is the approved Bartlett tree trimmer, capable of cutting 1¼" branches with little effort. It is the only tree trimmer made which will cut a branch close to the trunk and not wound the bark. Its tremendous leverage and the smoothness of the severed parts has made it the standard of use among many Bell and Independent telephone companies as well as hundreds of Light and Power Companies.

The Bartlett No. 4 pole saw will, with great ease, cut branches of even larger size.

Our No. 1 Compound Lever Tree Trimmers are thoroughly insulated with Bakelite to insure the safety of your linemen.

Descriptive folder on request. Write today!

Bartlett Mfg. Co.
451 East Lafayette Ave.
DETROIT MICH.

April, 1921, witnessed Mr. Harkness' reentry into the Bell system when he joined the A. T. & T. Co. general departments to engage in special commercial studies. The following year the broadcasting activities assumed so important a form as to require the services of an executive of Mr. Harkness' calibre to take charge of them. Accordingly, he was given the title of assistant vice-president, operation—B department. In this capacity he directed the destinies of Station WEAF up to the time of its recent sale to the National Broadcasting Co., Inc., a subsidiary of the Radio Corp. of America.

A. B. Clark, superintendent of plant and construction of the United Home Telephone Co., Muskegon, Mich., and its predecessors, the Citizens Home and Lake Shore Telephone companies, for the past 22 years, will leave with Mrs. Clark for London, England, early this month, after having been continuously employed in telephone work for the last 30 years. In London Mr. Clark will be in the employ of the Associated Telephone & Telegraph Co., which is owned by Theodore Gary & Co. of Kansas City.

Mr. Clark is a Grand Rapids product, born and raised there, and it was in the Furniture City that he started telephone work. In 1897 he went to work for the Citizens company there, going to Muskegon in 1904 from the Union company of Owosso to become superintendent of the local plant.

Under Mr. Clark's supervision, the automatic system was cut over in Muskegon at midnight, December 15, 1926. Where in 1904 there were 1,600 telephones in the Muskegon exchange, there are now nearly 11,000.

W. C. Diven has been named as general manager of the Citizens Telephone Co., Delaware, Ohio, to succeed the late George H. Carter. The permanent appointment was made after Mr. Diven had temporarily filled the position since the recent illness and death of Mr. Carter.

He has been a member of the board of directors of the company for a number of years and has always been much interested in its affairs.

Mr. Diven will continue to head the W. C. Diven Wholesale Candy Co., a local concern.

Z. A. Kimbro has been appointed district manager for the State Telephone Co. of Texas with headquarters at Brownfield, Texas. Mr. Kimbo was formerly traveling representative for the Monarch Telephone Mfg. Co., and later was with a wholesale electrical and radio supply company of Sioux City, Iowa.

C. S. Nevins has been named as manager for the Ashland (Neb.) exchange of the Lincoln Telephone & Telegraph Co., vice W. J. Bennett, resigned. Mr. Nevins entered the business with the Nebraska Telephone Co. in 1904, but since 1912 has been with the Lincoln company, in various capacities at several of its exchanges.

W. P. Parish, who has been district commercial supervisor for the Northwestern Bell Telephone Co. at Omaha, has been promoted to the position of Nebraska division commercial supervisor, with headquarters at Omaha. **D. T. Patterson,** manager of Unit No. 1, has been named as district supervisor in his stead.

C. B. Raney is the new manager of the Kahoka Telephone Co. at Kahoka, Mo. Mr. Raney went to Kahoka from South Dakota and previous to that was at Cedar Rapids, Iowa.

Obituary.

A. J. Corkins, 63 years old, division commercial superintendent for the Southwestern Bell Telephone Co. at Tulsa, Okla., died in Tilley's hospital at Muskogee on December 19.

Mr. Corkins had been with the Bell system for 20 years. In the early days of Oklahoma he was station agent for the Santa Fe railroad at Guthrie.

Tree Expert Gives Ohio Bell Linemen Lectures.

Classes in scientific tree trimming have been inaugurated by the Ohio Bell Telephone Co. as the latest step in educating its linemen. The objective is to keep trees and shrubbery from damaging contact with telephone lines, and to do this work in such a way that it will not interfere with the natural growth of the trees.

These classes are being held throughout the company's territory. The Akron educational program was launched at a meeting in the company's office on December 15. Harry C. Hyatt, once city forester of Cleveland and now Ohio Bell plant supervisor, and F. C. Mohr, the company's toll maintenance supervisor, are the speakers.

In connection with the campaign, the company has had a book on "Standard Tree Methods" prepared and this is being supplied to employes who would, in the course of their work, do tree trimming.

Siemens Brothers & Co. Secure Large Australian Order.

Siemens Brothers & Co., Ltd., Woolwich London, England, have just secured an order from the Australian government in competition with other manufacturers, for six new automatic exchanges.

These are for the Brisbane area, Australia, and comprise a total of 12,140 lines.

Prices in the Metal Markets.

New York, December 27—Copper—Quiet. Electrolytic, spot and futures, 13½ @13⅝c. Tin—Steady. Spot and nearby, $67; February, $66.02. Iron—Steady. No 2, f.o.b. eastern Pennsylvania, $22@22.50; No. 2 f.o.b. Buffalo, $19@20; No. 2, f.o.b. Alabana, $20@21. Lead—Dull. Spot, $7.80.

Need of Depreciation Accounting

Opposing Views on Depreciation of Telephone Companies and Railroad, Gas, and Electric Light Companies—Analysis of Them in the Report and Conclusions of the Interstate Commerce Commission's Recent Order—Part Two

Having reached the conclusion that depreciation charges are necessary in order that the accounts may properly reflect the facts of operation, it is, strictly speaking, immaterial whether or not they burden patrons or investors. Nevertheless that question will repay consideration.

As an aid to clear thinking, let us again assume a company using but a single unit of property with the intent of abandoning operation when that unit ceases at the end of 10 years to be fit for good service.

To simplify the matter further, let us assume that the value of the unit, aside from depreciation, remains at its original cost throughout the 10 years. If, then, one-tenth of the cost of the unit be charged to depreciation each year and collected from the patrons, three courses are possible:

(*a*) The amount so charged may be regarded as concurrent reimbursement to the company for the portion of the property which has been consumed in service, the amount upon which it is entitled to a fair return being correspondingly reduced.

This will be fair to the company, but in the case of the patrons it will have the result that the amount which they are required to pay for service will each year steadily diminish. Thus, at the end of nine years they will be required to pay a fair return upon but one-tenth of the original investment, although the service will be unchanged, the assumption being that the property continues fit for good service until the time of its retirement.

(*b*) The amount so charged may be segregated in a fund to be applied to the reimbursement of the company when the property is finally retired; in the meantime the patrons to pay a fair return upon the full amount of the original investment.

If this course be followed, the amount which patrons are required to pay each year for service will be uniform, but the fund at the end of the 10 years will be larger than necessary to reimburse the company for the cost of property, in view of the interest accumulations.

(*c*) Obviously there are objections to both of the foregoing plans. Yet another course to pursue would be to require the patrons throughout the 10 years to pay a return upon the full amount of the original investment, but to require them to pay for depreciation each year, not one-tenth of the cost of the property, but such amount as will with the accumulating interest produce a fund at the end of the 10 years sufficient to reimburse the company for the cost. This is what is known as the sinking-fund method of depreciation.

This simple illustration, however, is purely hypothetical. Railroad and telephone properties are actually made up, not of one but of many units, and normally they are continually growing in size. Moreover, the sinking-fund method, while in certain aspects, correct in theory, is subject to practical objections for reasons which will hereinafter be explained.

The more usual plan in dealing with depreciation is similar to that outlined in (a) above. Amounts collected as depreciation charges, however, are not ordinarily put out at interest but are used for additions and betterments. It is an essential part of this plan that the same accrued depreciation, which is represented by the depreciation reserve, should be deducted in determining the amount on which the company is entitled to a fair return, for the reimbursement for property consumed in service is concurrent with the consumption and is not deferred until the time of final retirement.

The company has the full use and benefit of the sums paid in each year by way of reimbursement, and in practice they are used to acquire new property upon which the company is entitled to return. Thus the gaps in the investment caused by depreciation are filled as they occur.

Clearly this method of treatment is fair to the company. In practice, also, it produces results approximating those of the sinking-fund method, so far as patrons are concerned.

They are charged each year somewhat more for depreciation than under the latter method, but there is compensation for this excess in the fact that the accrued depreciation is deducted in determining the amount upon which they are required to pay a fair return. Moreover, with a complex, growing property made up of many units, this amount does not continually decrease, as in the case of the theoretical property made up of a single unit.

As will later more fully appear, the doctrine that accrued depreciation must be deducted in determining rate-base value has been upheld very definitely by the United States Supreme Court. That being the case, the depreciation or installment method of accounting becomes a necessary measure of self-protection, so far as the companies are concerned.

Notwithstanding these decisions of the Supreme Court, however, the railroad, gas, and electric companies are not ready to concede this doctrine, and hence their insistence upon the retirement method of accounting.

The close connection between the two positions is very evident. It is the presidents' conference committee on valuation that has continually insisted in our railroad valuation proceedings that so long as a railroad property is maintained in "100 per cent efficiency" no depreciation exists; and it is that same committee which in this proceeding has insisted that the retirement method of accounting must be followed. The positions sustain each other, and if one falls the other falls.

In our consideration, therefore, of the relative burdens imposed by the depreciation and retirement methods of accounting, we must start with the premise that the former presupposes full deduction of accrued depreciation in ascertaining the rate-base value, and that the latter presupposes no such deduction except where what may be termed "deferred maintenance" exists.

What are, then, the relative burdens upon patrons? So far as operating ex-

Lon Dunn Says:

In other days, when 'twas desired to scatter news around, a man or boy jumped stride a horse and run him o'er the ground. A hundred souls could get the news, perhaps, throughout that trip, and hundreds more he couldn't reach, so had to let 'em rip. In many ways much time was lost that meant both strength and cash, 'til man found out a wire could spread the news 'round in a flash.

So now man leans against the wall and talks and paws the air, and says all kinds of sassy things to some chap way off there. In a minute he does more o'er the telephone and in a better way, than he could afoot or on a horse a chasin' 'round all day. But the ones that get the greatest good a-talkin' in the wall are the women folks about the place, the short ones and the tall.

They load the wires throughout the day with news that "just won't keep," and often talk and listen in when they ought to be asleep. They set the hens and talk of babes and tell about the sick, with some chap cussin' down the street who needs the line right quick. But the dear ones keep on piecin' quilts and makin' winter kraut; and we wouldn't stop them if we could, so let them talk it out.

So I'll bet the world can't show more good from anything at all than the people get as days go by, from the telephone on desk or wall.

penses are concerned, in the one case there will be a fluctuating expense for retirements; in the other there will be, in substitution, a more nearly uniform charge for depreciation.

Assuming a new plant, the depreciation charges will normally exceed each year the average retirement expense. Assuming an older plant which has reached and is maintaining its maximum development, in time the depreciation charges will be no greater than the average yearly retirement expense.

Assuming a growing plant, whether old or new, the depreciation charges will probably be somewhat greater than the average retirement expense, although the excess will be less for an old company.

It must be borne in mind, however, that the retirement method of accounting contemplates the accumulation of reserves in connection with the larger units of property and that, to the extent that this policy is followed, the operating expense results of the two methods will more closely correspond.

But when it comes to return upon investment, the results of the depreciation method will clearly be much more favorable to the patrons than the results of the retirement method. Summing the matter up, it appears that in the case of a new plant the former method will increase somewhat the operating expenses which patrons are called upon to pay, although this excess will diminish to the extent that under the latter method reserves are created for the retirement of the larger units.

As a plant grows older, this excess will continually decrease, and at the same time there will be a steadily growing saving, under the depreciation method, in the return upon investment which patrons are under obligation to provide. In time the net burden upon patrons will be less under the depreciation method than under the retirement method.

It is equally clear that under the former there will be materially less securities outstanding which must be supported if the company is to prosper and be able to render adequate service. This may not be true if, under the retirement method, the company has been able to accumulate a surplus equal to the reserve which would have been built up under the depreciation method; but manifestly the accumulation of such a surplus is as much of a burden upon patrons as the building up of a reserve.

Turning to investors: So long as revenue is adequate, it is evident that depreciation charges impose no present burden upon investors; and it is equally evident that such charges strengthen their position for the future.

Under the retirement method a company will be faced, when at length it "strikes its gait," with a greater volume of securities upon which to pay interest and dividends and by yearly charges to operating expenses for retirements which will average nearly, if not quite, as much as the yearly charges under the depreciation method and which in actual practice will fluctuate in an uncertain and sometimes dangerous way.

Obviously the financial condition of the company will be less secure under the retirement than under the depreciation method, and it will be less well equipped to face the future and reap the benefit of improvements in the art.

If revenue resources are not adequate, it is true that the retirement method may enable a company, at least in the early years of development, to make a better apparent show of net earnings; but it does not follow that this is a blessing of the investor.

It may well be argued that the best way for a company engaged in a quasi-monopolistic public service to obtain adequate revenue is to disguise its actual requirements as little as possible. The history of such enterprises is full of instances where investors have been misled to their hurt by delusive income and balance sheet statements.

The effect of the depreciation method upon investors may, indeed, be tested by results. As will hereinafter be shown, the telephone companies have quite generally employed this method, and they have built up depreciation reserves which are relatively much larger than those which the steam railroads have built up. Moreover the telephone industry is much younger than the railroad industry and has more recently emerged from the development period. It will also appear that certain steam railroads have depreciation reserves which are relatively much larger than those of others.

Yet there is nothing to show that the investors in telephone companies have in general been worse off than the investors in steam railroads. Nor is there anything to show that the investors in railroads, which have made generous provision for depreciation, have been worse off than the investors in railroads which have made little provision.

One result of depreciation accounting ought not to be overlooked. The theory that needed retirements equalize, after a large property has "struck its gait," is only a theory which, as we have stated, is not confirmed as a proposition of general truth by statistics within our knowledge.

Under depreciation accounting, the amount which patrons are called upon to pay each year for property used up in service is, comparatively speaking, a fixed quantity. The depreciation reserve acts as a reservoir which absorbs the often violent fluctuations in actual retirements.

Under the retirement method, the amount paid each year is a less dependable quantity. It may in some year amount to a serious burden, and the danger constantly threatens that to avoid such burdens the management may neglect retirements required in the interest of good service.

It is further to be noted that the opponents of depreciation accounting attempt to draw a distinction between present and future patrons, accompanying this distinction by the claim that such accounting burdens the former for the latter's benefit.

As we have seen, the merits of this claim are open to question, but regardless of that fact the patrons of today merge with those of tomorrow. No good purpose is served by attempting to draw a line between them and their interests. The object of concern should be the community. What is sound policy for the community is, in the long run, sound policy for the individuals who make it up.

(To be continued.)

Rates Set for New York to London Telephone Calls.

A special cable dispatch from London this week states that transatlantic telephone service, which is to be available to the public this month, will cost £15 (about $75) for the first three minutes of a call, and £5 for each additional minute, according to an announcement of the postmaster general on December 28.

Wrong numbers will not count, however, and unless the London operator gets the particular person asked for in the New York area, to which the service will be limited for the present, the charge will be £2 for making the attempt.

The Scotch Will Understand the Reason for This.

An American just returning from Europe commented that following America's example several European companies had instructed their operators to omit the repetition of the number given by the subscriber, and inaugurated the practice of merely acknowledging the request by saying "Thank You."

This change has caused some unfavorable comments, especially in Glasgow where such a gratuitous reply leaves the thought within the sub-conscious mind of the subscriber that something has been given away.

J. J. Seguin, Quebec Cedar Man's Attractive Christmas Greetings.

Among the beautiful holiday greetings issued last month, one of the most notable came from J. J. Seguin, cedar pole producer of Quebec, Canada. Placed between attractive drawings reminding one of the northern woods were these lines:

True as the shaft of the northern pine,
Deep as the peace in her snow-swept boughs,
Sweet as her breath on the winter air,
Strong as her roots in their rock-bound bed,
Old as the hills—yet ever new,
The spirit of Christmas is here again,
Bearing peace and good will to men.

What the Commissions Are Doing

quested, using for that purpose such available poles as he may have on hand, provided the complainants will haul these poles, furnish such new poles as may be necessary to complete the work and assist in setting the poles and cutting the bushes.

We have carefully considered the matter and we believe that the proposition that Mr. Thompson has made for the company is more favorable to the complainants than any order which the commission would be justified in making at this time.

The pending petition must, therefore, be dismissed, but this fact need not prevent the complainants from obtaining the desired service if a satisfactory agreement in regard to contributions of poles and labor can be made between them and the company. If no agreement between the parties in interest as to the required extension can be reached and changed conditions in the future seem to require further consideration of this matter, the case may be heard again upon a new complaint."

Company Authorized to Serve Replacing One Sold for Taxes.

Two orders issued by the New Hampshire Public Service Commission on December 16, give to the Canterbury & Loudon Telephone Co. authority to embark in business and to the Canterbury & Boscawen Telephone Co. the right permanently to discontinue operations as a public utility. The first-named corporation will operate in Canterbury, Boscawen, Northfield, Loudon and Penacook.

The Canterbury & Boscawen company began operations on June 23, 1896, in approximately the same territory that will be occupied by the Canterbury & Loudon company, but it was not incorporated under the general laws until 1905.

The company was not a financial success, the public service commission states, and its property was sold on August 26, 1926,

(Continued from page 30.)

to the state of New Hampshire for nonpayment of taxes.

St. Louis Firms Attack Commission Orders in Petition to Court.

Validity of two orders issued by the Missouri Public Service Commission, extending increased rates of the Southwestern Bell Telephone Co. on business telephones in St. Louis, is attacked in an application for a writ of certiorari, filed in the Missouri Supreme Court on December 11 by eight St. Louis business firms.

The petition asserts the original rate increase order, which would have expired July 31 last, no longer is operative, and charges that the company illegally has been collecting $75,000 a month from telephone subscribers in St. Louis. An appeal by the city of St. Louis from the original increase order now is pending in supreme court.

Firms filing the petition are the Campbell Iron Co., Goodfellow Lumber Co., J. S. Merrill Drug Co., Rice-Stix Dry Goods Co., International Shoe Co., Lubrite Refining Co., Shapleigh Hardware Co. and Woodward & Tiernan Printing Co.

The city did not join in the application for review of the case, as its legal department consented to the two extensions of three months each. The rates are effective until January 31, under the second extension order.

The original rate increase was granted by the commission for a test period of 13 months, expiring July 31 last, and involved an increase of about $890,000 a year in the rates of business telephone subscribers. The city took the case into the St. Louis Circuit Court on an application for a writ of certiorari for review of the commission's findings. The circuit court sustained the commission, and the city took an appeal to the state supreme court before the expiration of the test period.

On July 23 last the commission granted an extension of three months, as an audit of the results of the rate increase still was in progress. Another three months' extension was granted October 29 last.

In the application filed December 14 it is contended the commission was without jurisdiction to grant the extension orders while the appeal was pending in supreme court, and that, therefore, the rates charged under these extension orders are invalid.

At the request of the city, a hearing was held by the commission November 17 last, on the audit made by the commission accountants of the results of the increase.

At this hearing it developed that the city had taken an appeal. The commission immediately terminated the hearing and stated it would take no further steps pending termination of the appeal in the supreme court.

Nebraska Court Refuses a Rehearing in Accident Case.

The Nebraska Supreme Court has refused the request of the Wolbach Telephone Co. for a rehearing of the case in which John Peterson secured a $6,000 judgment for permanent injuries of a crippling character sustained by being run down in the streets of Wolbach, Neb., by an employe of the company driving a company car.

It was urged in the motion for rehearing that the court had overlooked the fact that the driver had done all that was humanly possible to avoid an accident, and that Peterson, in addition to never looking up as he cater-cornered across the street, with a pail of water in his hand, leaped in front of the car as it was about to safely pass him, in his fright at discovering it so close to him.

As the company did not carry any compensation insurance, it will have to pay,

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with costs and attorney fees, something like $7,000, out of its own treasury.

Rates Increased for Company Operating at a Loss.

The Jefferson-Civil Bend Telephone Co. Jefferson, S. D., was recently granted authority by the state railroad commission to increase telephone rental rates, effective January 1, 1927. The old and new monthly rates:

	Old	New
Business, individual line	$2.00	$2.25
Residence, individual line	1.25	1.50
Rural, party line, residence	1.25	1.50

Permission was also granted to establish the discount rule.

The record showed that the applicant company operates a telephone exchange in Jefferson, Union county, serving 84 city subscribers and 130 rural party line subscribers. Service station switching is also performed for 30 stations not owned by the company.

Prior to the hearing the engineer for the commission inventoried and appraised the property of the company and found the reproductive cost new, including tools, material and supplies, to be $16,073, and the reproductive cost new less depreciation $10,266. It was impossible to determine the record cost of the property as the books had been improperly kept and no accounting had been made for retirements or replacements and all extensions made had been charged to operating expenses. The company has been carrying a book cost of plant and equipment in the estimated amount of $10,000 for several years past.

After careful consideration of the record in this case and all elements of value to be considered as a rate base, the commission found the fair value of the applicant company's property used and useful in furnishing telephone service, including working capital, to be $10,500.

The record showed that the property was operated very economically, the manager being paid $2,415 per annum, out of which amount he pays the operators' wages and the expenses on his personal car used in company business. The company rents the second floor of a building in which the office and the operating room are located and a suite of rooms is provided for the manager's residence. The rental for the entire floor is $150 per year.

Based on the number of subscribers as of September 30, 1926, the possible or potential revenue of the company, under present rates, amounts to $4,105.50. With the new rates this revenue will be increased by approximately $645. It was shown that on the basis of present revenue and expenses the company is operating at a loss of $151.90 per annum and that if the proposed rates were granted the company would earn a net income in the amount of $493.10. The company employs two operators and furnishes continuous service from 7:00 a. m. to 10:00 p. m. and emergency service during other hours.

Authorized to Increase Net Rates Effective January 1.

The Wisconsin Railroad Commission of December 21 authorized the Central Telephone Co. to increase its monthly net rates for service at its Denmark exchange as follows:

	Old	New
One-party, business	$2.75	$3.50
Two-party, business	2.25	3.25
One-party, residence	2.00	2.50
Four-party, residence	1.75	2.25
Rural	1.75	2.10
Desk sets in residence or rural lines, additional		.25
Switching Denmark Farmers & Merchants Telephone Co. subscribers, per year per subscriber	5.25	7.50

The order of the commission authorized gross rates of 25 cents per month in addition to the foregoing new net rates, and provided that these rates may be made effective for service rendered on and after January 1. The company was further ordered to make service available continuously for 24 hours each day.

Toll Rate of 10 Cents Between Exchanges After Improvements.

Under date of December 21, the Wisconsin Railroad Commission rendered a decision ordering the Wheeler Telephone Co. and the Prairie Farm Ridgeland & Dallas Telephone Co. to discontinue the present toll rate of 5 cents per message for calls between Wheeler and Prairie Farm and to place in effect a rate of 10 cents per message.

The order provided that the new rate may be made effective for all toll service furnished after the conversion of the present grounded circuit to a metallic one.

THEODORE GARY AND COMPANY
KANSAS CITY, MISSOURI

Seventy-fourth Consecutive Quarterly Dividend

The regular quarterly dividend of $3.00 a share on the Common Stock; $2.00 a share on the Preferred Stock, has this day been declared payable January 1, 1927 to the Stockholders of record as of the 31st day of December, 1926, at 3:00 p. m. The books will be closed to transfer on December 24th and reopened on January 1, 1927.

(Signed) H. L. GARY,
First Vice-President and Treasurer.

December 23, 1926.

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

December 22: Associated Telephone Co., operating in cities of Long Beach and San Bernardino and in territory adjacent thereto, applied for authority to issue and sell $1,800,000 par value of its first and refunding mortgage gold bonds, Series "A" and to execute a new mortgage and deed of trust securing the payment of the bonds.

IDAHO.

December 9: Richfield Public Service Co. filed application for permission to discontinue its service in Richfield, Lincoln county.

December 11: Order issued suspending the proposed tariff of long distance tolls filed by the Pacific Telephone & Telegraph Co., for its lines in the central part of the state. This is the third tariff which the commission has suspended in recent weeks. The first two were permanently suspended by agreement with the company, when the third schedule was filed.

Protests from Grangeville and Ferdinand caused the present suspension, which is for 120 days from December 10.

ILLINOIS.

December 8: Order approved authorizing the Watseka Telephone Co. to sell certain premises in Watseka to J. W. Rose for $2,300.

December 8: Order approving intercorporate agreement, dated October 12, 1926, between the Illinois Bell Telephone Co., and the DeKalb & Ogle Telephone Co. for the connection of toll lines.

December 8: Order approving intercorporate agreement, dated September 28, 1926, between the Illinois Bell Telephone Co. and the Rantoul Telephone Co. for the connection of toll lines of companies.

December 8: Order approving intercorporate agreement, dated October 12, 1926, between the Illinois Bell Telephone Co. and the Geneseo Co-operative Telephone Co. for the connection of toll lines of companies.

December 8: Order approving intercorporate agreement, dated September 16, 1926, between the Illinois Bell Telephone Co. and the Northern Illinois Telephone Co., it being a modification of a traffic agreement dated December 21, 1925, between these companies.

December 8: Order approving intercorporate agreement, dated September 20, 1926, between the Illinois Bell Telephone Co. and the Streator Telephone Co., it being a modification of a traffic agreement, dated January 16, 1925, between these companies.

December 8: Order approving intercorporate agreement, dated October 6, 1926, between the Illinois Bell Telephone Co. and the Illinois Southeastern Telephone Co., it being a modification of a traffic agreement, dated February 6, 1926, between these companies.

December 8: Order approving intercorporate agreement, dated September 30, 1926, between the Illinois Bell Telephone Co. and the Illinois Southern Telephone Co., it being a modification of a traffic agreement, dated March 27, 1926, between these companies.

December 8: Order approving so much of agreement, dated August 30, 1926, between the Public Service Co. of Northern Illinois and the Illinois Central Railroad Co. and Illinois Bell Telephone Co., as provides for the joint installation of a wire crossing in Homewood, Cook county.

December 9: Dahlgren Telephone Co.'s schedule applying to Dahlgren, rules, regulations and conditions of service, approved.

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Kellogg Cord Circuit relays, per pair @	2.25
Cook No. 10 Arresters mounted 20-line per strip, new, per strip @	9.50
Bunnell Telegraph operator's keys @	.75
Kellogg 16-33-50 or 66 cycle harmonic ringers with gongs @	1.35
Stromberg late type 1000 ohm ringers with gongs	1.25
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Leich Elec. Co. wall automaphones	7.50
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Leich Elec. Co. common battery hotel sets, direct current type	4.00
Leich Elec. Co. common battery desk sets, direct current type	6.00
Leich Elec. Co. P. M. and D. C. receivers	$.75 and .50
Leich Elec. Co. harmonic ringers, 16-33-50-66 and 30-42-54-66 cycle	1.00
Leich Elec. Co. pulsating harmonic ringers	1.00
Leich Elec. Co. 1-MF and 2-MF condensers	.35 and .50
Leich Elec. Co. transmitters with backs	.50
Leich Elec. Co. common battery bell boxes (oak finish)	2.00
Leich Elec. Co. 7-A Frequency converters	35.00
New receiver cords (brown)	.25
New extension cords, 3, 4 and 5 conductor	.35, .45 and .55

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INDIANA.

December 14: Petition filed by Home Telephone Co. for increased rates at its Goshen and Elkhart exchanges.

KANSAS.

December 11: The Elk Falls Telephone Exchange, Elk Falls, asked permission to sell to W. A. Beverlin, and Mr. Beverlin asked permission to operate.

December 14: The Hoisington-Stickney Telephone Co. given permission to sell its exchange at Susank to the Susank Telephone Co.

December 21: Permission given for the sale of the telephone plants at Milan, Conway Springs and Argonia by E. J. Frantz, to the Goddard Telephone Co.

MAINE.

December 9: Rangeley Telephone Co., of Rangeley given authority to sell to Franklin Farmers Cooperative Telephone Co., of Farmington.

December 15: Complaint of Frank O. Reed and nine others, of Windsor, against the China Telephone Co. dismissed. They alleged that they were unable to obtain service from the company.

MINNESOTA.

December 27: McLeod County Telephone Co., of Glencoe, authorized to purchase all the physical property of the Electric Phone Co. operating exchanges at Stewart and Buffalo Lake with approximately 450 telephones.

NEBRASKA.

December 22: Application filed by Dundy County Mutual Telephone Co. for permission to issue bonds to take up current indebtedness in form of notes, overdue interest and bills payable.

December 23: In the matter of the application of the Blue Hill district of the Glenwood Telephone Co. for permission to continue rates that expire by limitation on December 31, 1926, ordered that, as period of time set for compliance with conditions has not been sufficient to make possible a study of results, rates continue in effect until April 1, 1927.

NEW HAMPSHIRE.

December 16: Canterbury & Boscawen Telephone Co. authorized to discontinue operation as a public utility and Canterbury & Loudon Telephone Co. authorized to embark in business, operating in Canterbury, Boscawen, Northfield, Loudon and Penacook.

OHIO.

December 17: Hearings in Ohio Bell state-wide rate case continued until February 15.

WISCONSIN.

December 21: Murry Farmers Telephone Co., operating 15 rural lines that terminate on the switchboard of the Bruce exchange of the Wisconsin Telephone Co., authorized to place in effect rates applied for, which are same as Wisconsin Telephone Co. charges for rural service.

December 21: Central Telephone Co. authorized to increase rates at its Denmark exchange, effective January 1.

December 21: Wheeler Telephone Co. and Prairie Farm Ridgeland & Dallas Telephone Co. ordered to discontinue 5-cent toll rate between Wheeler and Prairie Farm and to place a 10-cent toll rate in effect after conversion of grounded to metallic circuit.

January 6: Hearing on application of the Bundy-Crescent Telephone Co., with headquarters in Rhinelander, for permission to increase its rates from $15 per year to $2.50 per month net.

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